# User Manual

**Version: 1.4**

Contents


**1 BlueSoleil™ Introduction ..... 1**

1.1 Profiles ..... 1
1.2 New features in BlueSoleil 1.4 ..... 2
1.3 Features in BlueSoleil 1.2 ..... 2

**2 BlueSoleil™ Basic Operations ..... 4**

2.1 Start BlueSoleil™ ..... 4
2.2 Exit BlueSoleil™ ..... 4
2.3 BlueSoleil™ Main Window ..... 5
2.4 Service Window ..... 8
2.5 What You Need To Do Before Build A Connection ..... 10
2.6 Start Or Stop A Bluetooth Service Connection ..... 14

**3 Bluetooth Security ..... 16**

3.1 Introduction ..... 16
3.2 BlueSoleil Security Configuration ..... 17

**4 Personal Area Networking ..... 22**

4.1 Introduction ..... 22
4.2 Communication Between Two Computers ..... 23
4.3 Access LAN Through PAN-NAP ..... 29
4.4 Access LAN Through IVT BlueSoleil™ ..... 33
4.5 Access Internet through IVT BlueSoleil™ ..... 35
4.6 PAN Configuration ..... 36

**5 Dial-Up Networking ..... 38**

5.1 Introduction ..... 38
5.2 Connect to a Dial-up Gateway from a Computer ..... 38
5.3 Settings for Dial-up Networking Profile (client side) in Windows98/Me ..... 41

**6 Bluetooth Serial Port ..... 46**

6.1 Introduction ..... 46
6.2 Connect Two Computers ..... 46
6.3 Use SPP to Print a Document ..... 48
6.4 Use a cellphone to control a computer ..... 48
6.5 SPP Configuration ..... 50

**7 Bluetooth File Transfer ..... 52**

7.1 Introduction ..... 52
7.2 Transfer files to/from a Computer ..... 52
7.3 FTP Configuration ..... 55

**8 LAN Access ..... 56**

8.1 Introduction ..... 56
8.2 Access a Local Area Network (LAN) ..... 56
8.3 Access a LAN via a LAN Access Point ..... 60
8.4 Settings for LAN Access Profile (client side) in Windows98/Me ..... 61
8.5 Usage of LAN Access Profile (server side) in Windows98/Me ..... 65

**9 Object Push ..... 70**

9.1 Introduction ..... 70
9.2 Transfer Objects from a Computer to a Bluetooth Cellular Phone ..... 70

9.3 Transfer Objects from a Bluetooth Cellular Phone to a Computer ..... 74
9.4 Transfer Objects between Two Computers..... 75
9.5 Configure OPP Service..... 76
9.6 Using OPP in Microsoft Outlook ..... 77

**10 Synchronization..... 80**

10.1 Introduction..... 80
10.2 Exchange PIM Data with a Cellular Phone ..... 80
10.3 Set up SYNC Connection between Two Computers..... 81
10.4 Synchronization Configuration ..... 83
10.5 Using Synchronization in Outlook ..... 84

**11 Hardcopy Cable Replacement ..... 87**

11.1 Introduction..... 87
11.2 Print a Document Using a Bluetooth Printer ..... 87

**12 Human Interface Device ..... 89**

12.1 Introduction..... 89
12.2 Connect a Computer to a Bluetooth Mouse ..... 89
12.3 Connect a Computer to a Bluetooth Keyboard ..... 91

**13 FAX..... 94**

13.1 Introduction..... 94
13.2 Connect to a FAX Gateway from a Computer ..... 94
13.3 Using FAX software on a bluetooth computer ..... 94

**14 Headset ..... 96**

14.1 Introduction..... 96
14.2 Create an audio connection between computer and Headset ..... 96
14.3 Using Headset Profile in BlueSoleil..... 98

**15 Advanced Audio Distribution ..... 100**

15.1 Introduction..... 100
15.2 Play music between computer and AV Headphone wirelessly ..... 100
15.3 Play music between two computers wirelessly..... 103

**16 Basic Imaging ..... 107**

16.1 Introduction..... 107
16.2 Push an image from a digital still camera. ..... 107
16.3 Control a digital still camera remotely..... 108

**17 Connection Shortcut ..... 110**

17.1 Introduction..... 110
17.2 How to use Connection Shortcut ..... 110

**18 Bluetooth Glossary ..... 113**

# 1 BlueSoleil™ Introduction

BlueSoleil™ is a Windows-based Bluetooth Wireless software suite from IVT Corporation. It is fully compliant to the latest Bluetooth SIG specifications. BlueSoleil™ incorporates Bluetooth and computer technologies to enable users to wirelessly access computing devices, form networks, and exchange information.

## 1.1 Profiles

BlueSoleil™ V1.4 includes ten Bluetooth profiles. The following table indicates which of these profiles is available for client and server devices.

| Profile Description | | Client | Server |
|---|---|---|---|
| PAN | Personal Area Networking | √ | √ |
| SPP | Serial Port | √ | √ |
| DUN | Dial-Up Networking | √ | |
| LAP | LAN Access | √ | √ |
| FTP | File Transfer | √ | √ |
| HID | Human Interface Device | √ | |
| HCRP | Hardcopy Cable Replacement | √ | |
| OPP | Object Push | √ | √ |
| SYNC | Synchronization | √ | √ |
| AG | Audio Gateway | √ | √ |
| AV | Audio Source<br>Audio Sink | √ | √ |
| BIP | Basic Imaging | √ | √ |

BlueSoleil™ supports more than ten Bluetooth chip-sets and HCI interfaces including USB, UART, PCMCIA and Compact Flash.

IVT BlueSoleil™ supports:

- Windows 2000/XP
- Windows 98SE/Me

This manual describes how to use BlueSoleil™:

- How to start and exit BlueSoleil™.
- How to navigate the Main Window and Service Window.
- How to use the Bluetooth profiles.

## 1.2 New features in BlueSoleil 1.4

BlueSoleil version 1.4 is ready now with even more exciting new features, multimedia profiles are added into BlueSoleil.

They include:

- **Headset**
  With this feature, users can use Bluetooth Headset to listen to music, to record sound or to chat with others. Headset increases the user's mobility.

- **Audio/Video**
  With this feature, users can listen to stereo music with any media player wirelessly between Bluetooth enabled computers or Bluetooth enabled computer and Bluetooth Stereo headphone.

- **Basic Image**
  With this feature, users can push an image from a digital still camera to a computer, or control a digital still camera remotely from a computer.

## 1.3 Features in BlueSoleil 1.2

BlueSoleil version 1.2.0 is ready with exciting new features, aiming at making Bluetooth more easy to use for end user. Less steps is required to setup wireless connections. User can even do not care what is Bluetooth. Anyway, Bluetooth is just a kind of connecting method. So, please just have fun from all these new functions.

They include:

- **Seamless Integration with Windows**
  This is an important improvement to make it more easy to use Bluetooth. Generally, users do not care about what is Bluetooth and how can they connect to a Bluetooth device. From users' point of view, they just want to print a document, open a serial port, dial-up to Internet and send a FAX etc. To make this, BlueSoleil automatically setup Bluetooth connections for users. There is no need to setup connection before using Bluetooth anymore.

- **Integration with MS Outlook for Object Push and Synchronization**
  With this feature, contact cards and email messages can be sent or synchronized from Outlook directly via Bluetooth. Received cards and other information items will be imported to Outlook automatically.

- **Shortcut on Windows Desktop**
  Windows shortcut is introduced here to let user to be able to setup Bluetooth connection when they want by just double- clicking them. It makes Bluetooth connection extremely simple.

- **Security 2**
  With this feature, users can manage local Bluetooth services in a flexible way. Authentication, encryption and authorization can be configured based on every service. Users can set which remote device can access local services and which not.

- **FAX**
  FAX enable users to send a FAX from PC side via Bluetooth cellular phone or Bluetooth FAX machine wirelessly.

- **Network Address Translation, Network Access Point, and DHCP server in PAN**

With these functions, users can setup ad-hoc Personal Area Network quickly and share the Internet accessing among computer.

- **More Bluetooth Serial Ports**
  More Bluetooth Serial Ports are supported, with 4 Bluetooth Serial Ports for out-going connections and 2 Bluetooth Serial Ports for incoming connections.
- **Mobile HID**
  With this feature, users can make cellular phones like Ericsson T39 or T68 to work like a mouse and keyboard. Users can remotely control their PC to show Power Point etc.

# 2 BlueSoleil™ Basic Operations

## 2.1 Start BlueSoleil™

After installing BlueSoleil™, there are two ways to start the program:

1. A BlueSoleil™ shortcut icon on the Windows desktop.
2. An IVT BlueSoleil™ program group entry in the Windows' **Start | Programs** menu.

Double-click the BlueSoleil™ shortcut icon on the desktop or click the BlueSoleil™ menu item on the **Start | Programs | IVT BlueSoleil™** menu to start the BlueSoleil™ software.

The BlueSoleil™ icon will be displayed at the bottom right corner of the Windows desktop (Figure 2.1).

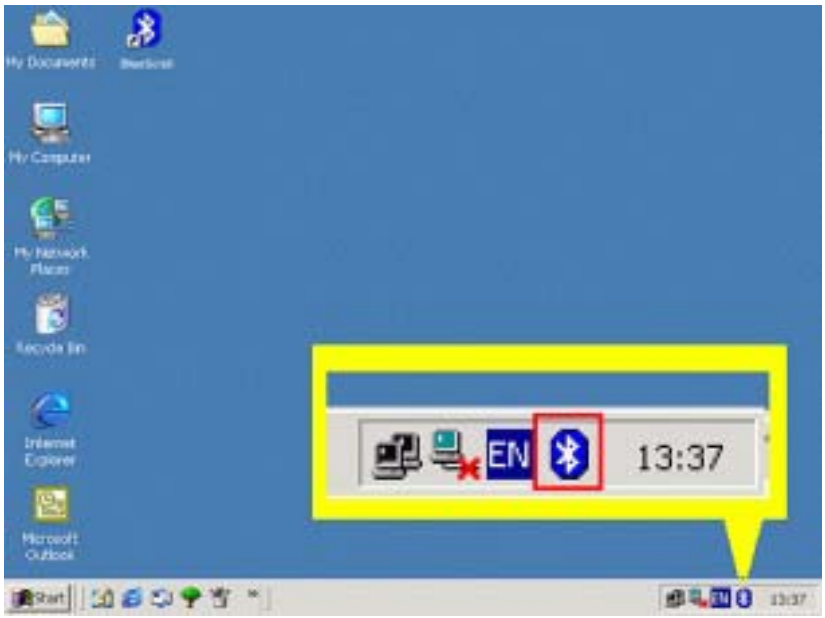


Figure 2.1: BlueSoleil™ icon

The BlueSoleil™ Main Window pops up as shown in Figure 2.2.

## 2.2 Exit BlueSoleil™

To exit BlueSoleil™, right-click the BlueSoleil™ icon at the bottom right corner of the Windows task bar and select **Exit** on the pop-up menu.

**Note:** Selecting the **Close** button at the top right corner of the BlueSoleil™ window only hides the BlueSoleil™ window.

## 2.3 BlueSoleil™ Main Window

The BlueSoleil™ Main Window displays all surrounding Bluetooth devices. From the BlueSoleil™ Main Window users can search for surrounding Bluetooth devices and can execute connect/ disconnect functions.

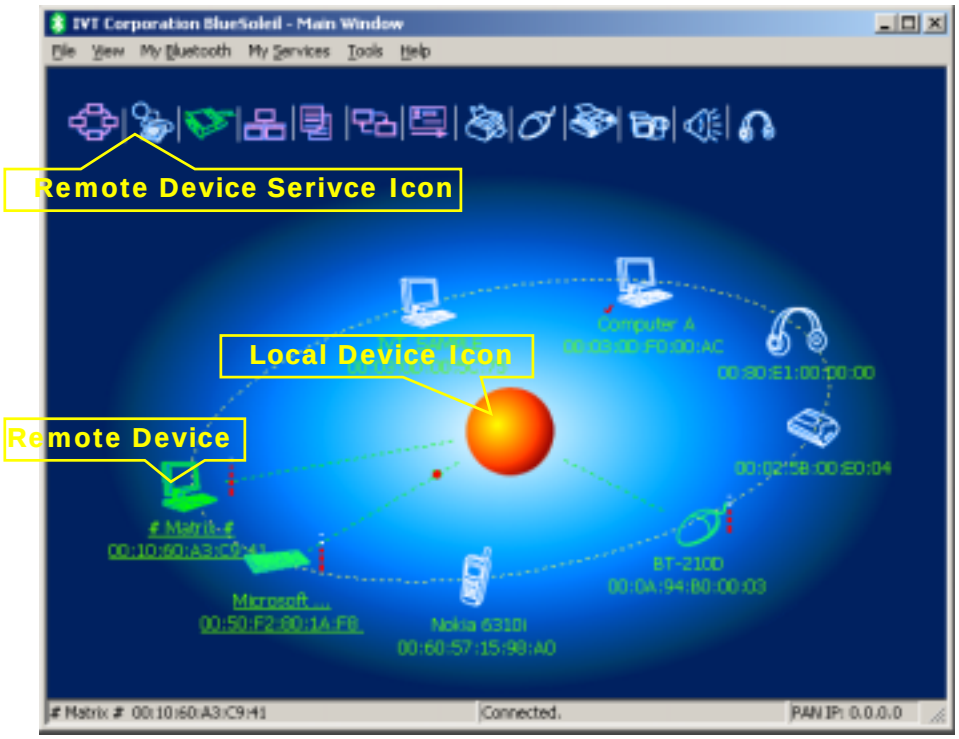


Figure 2.2: BlueSoleil™ Main Window

The main elements in the BlueSoleil™ Main Window are:

- My Device Icon
- Remote Bluetooth Device Icons
- Bluetooth Service Icons

### 2.3.1 My Device Icon

This icon represents the client computer. It is called the 'My Device icon' or 'center ball' in this document.

**Functions:**

- Hover the mouse over the My Device icon to display the client Bluetooth device name and address.
- Double-click to start/ stop searching for surrounding Bluetooth devices.
- Drag scrollbar on the right of main window to find other Bluetooth devices if there are more than seven devices.
- Right-click to display the pop-up menu with related operations.

### 2.3.2 Remote Bluetooth Device Icons

The icons in the table below represent the remote Bluetooth devices.

| Device Type | Icon |
|---|---|
| Headset | |
| Keyboard | |
| LAN Access Point | |
| Laptop | |
| Mobile | |
| Modem | |
| Mouse | |
| Personal Computer | |
| PDA | |
| Printer | |
| Scanner | |
| Unknown device | |

The following colors are used to indicate the status of the remote Bluetooth device:

- White (Idle)
  This is the normal status of the device.

- Yellow (Selected)
  The device has been selected by the user.
- Green (Connected)
  The device has been connected.

**Functions:**

- Single-click to select.
- Double-click to get the services remote Bluetooth device supports.
- Right-click to display the pop-up menu with related operations.

### 2.3.3 Bluetooth Service Icons

The Bluetooth Service Icons represent the Bluetooth services supported by the remote device.

| Bluetooth Service | Icon |
|---|---|
| Personal Area Networking | |
| Dial-up Networking | |
| Serial Port | |
| LAN Access | |
| File Transfer | |
| Information Synchronization | |
| Object Push | |
| Printer | |
| Fax | |
| Human Interface Device | |

| | |
|---|---|
| AV Headphone | |
| Basic Image | |
| Headset Audio Gateway | |

The following colors are used to indicate the status of the Bluetooth service:

- White (Idle)
  This is the normal status.
- Pink (Available)
  The Bluetooth service is available for the selected device.
- Yellow (Selected)
  The service icon has been selected by the user.
- Green (Connected)
  The service is connected.

**Functions:**

- Hover the mouse over the icon to display the service name.
- Single-click to select the service.
- Double-click to connect.
- Click to display the pop-up menu with related operations.

Figure 2.3: Bluetooth PAN Service Icon

## 2.4 Service Window

Select menu **View | Service Window** and the Service Window appears.

This window displays the Bluetooth services the 'my Bluetooth device' provides to remote Bluetooth devices. These services are called 'my Bluetooth services'.

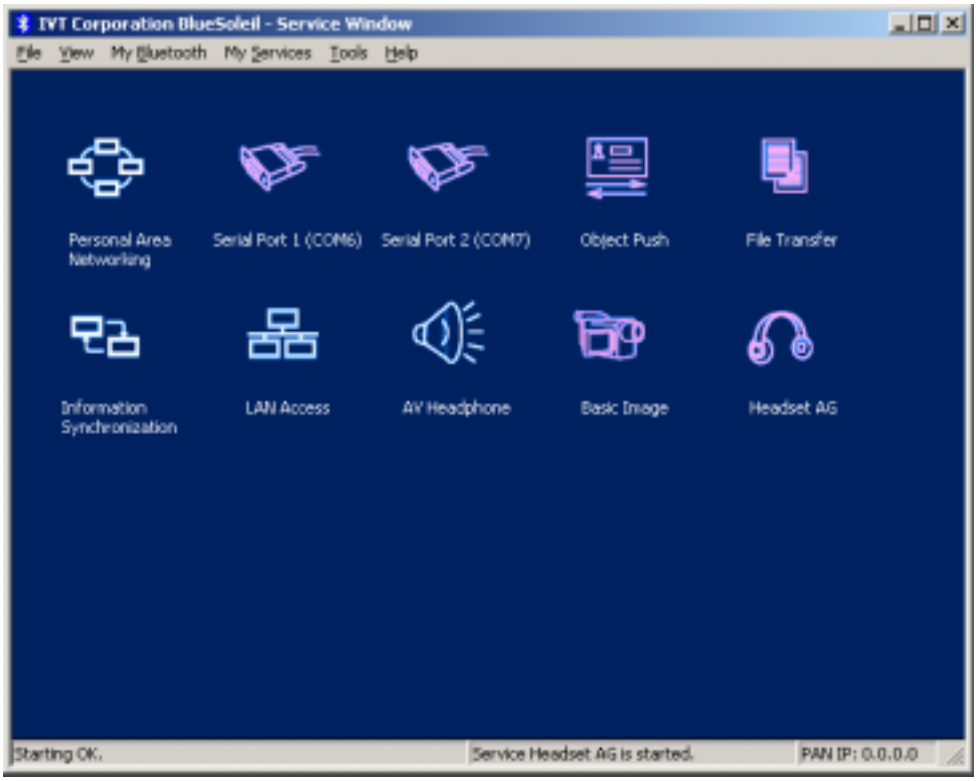


Figure 2.4: BlueSoleil™ Service Window

Main Elements:

- My Service Icons

### 2.4.1 My Service Icons

These icons represent 'my Bluetooth services'.

| My Bluetooth Service | Icon |
|---|---|
| Personal Area Networking | |
| Serial Port | |
| LAN Access | |
| Object Push | |

| | |
|---|---|
| File Transfer | |
| Information Synchronization | |
| AV Headphone | |
| Basic Image | |
| Headset AG | |

The following colors indicate the status of the Bluetooth service:

- White (Idle)
  Normal status.
- Pink (Started)
  My Bluetooth service is started.
- Green (Connected)
  A remote device has connected to my Bluetooth service.

### 2.4.2 Start/Stop a Bluetooth Service

Select a service icon in service window, and double-click to start/stop a service or select right popup menu to send command.

### 2.4.3 View the Property of a Service

Right-click to display the pop-up menu with related operations in service window.

## 2.5 What You Need To Do Before Build A Connection

3. Inquiring Bluetooth Devices in the vicinity
4. Pairing your desktop or laptop with the associated device

### 2.5.1 Inquiring Bluetooth Devices

**Method 1: Enquire Device**

To start to set up a Bluetooth connection, you have to find the remote device you want to connect first. You can choose one of the following methods to find the remote device.

You may double click My Bluetooth Device icon or from **MY Bluetooth Menu -> Bluetooth Device Inquiry** (Figure 2.5) to find other Bluetooth devices in range. Bluetooth devices within the radio range will be added to the orbit. The inquiry procedure will search up to 7 devices each time. After it finds the devices or it has been 25 seconds since the beginning of the inquiry, it will continue to refresh

the names of the found devices. Double clicking the local device or double clicking one of the remote devices (to start to search profiles it supports) will stop the inquiry procedure.

Figure 2.5 Inquiry Menu

**Method 2: Add Device from History List**

If there are more than 7 devices to find within the radio range, you can add the device you have used to the orbit from the history device list. Click **Tools Menu** and select **Add Device from History.** The History dialog box will be pop-up (Figure 2.6).

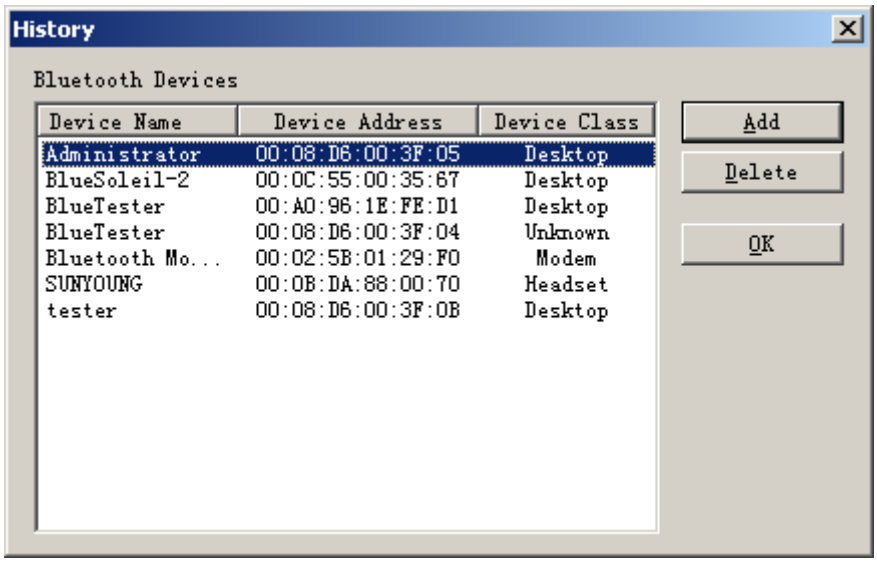


Figure 2.6 History Dialog

Select the device from the list and click **Add**, the selected device will be added to the end of the orbit. The shortcut key to open the History dialog box is Ctrl+H.

**Method 3: Add a New Device by Inputting Device Address**

If you are going to connect a device that you have never used, which is not in the history list and which you cannot find, you can add it directly by inputting its Bluetooth device address. Click **Tools Menu** and select **Add New Device**. The **Add Bluetooth Neighbor Device Manually** dialog box pops up.

Add Bluetooth Neighbor Device Manually
Please input the device address of the Bluetooth device you want to connect with:
00 : 00 : 00 : 00 : 00 : 00
OK
Cancel

Figure 2.7 **Add Bluetooth Neighbour Device Manually dialog**

Input the device address and click **OK**, and then the device will be added to the end of the orbit. However, the device type will be unknown. The shortcut key to open **Add Bluetooth Neighbor Device Manually** dialog box is Ctrl+N.

The remote devices found will be added to the orbit. Refer to the following window (Figure 2.8).

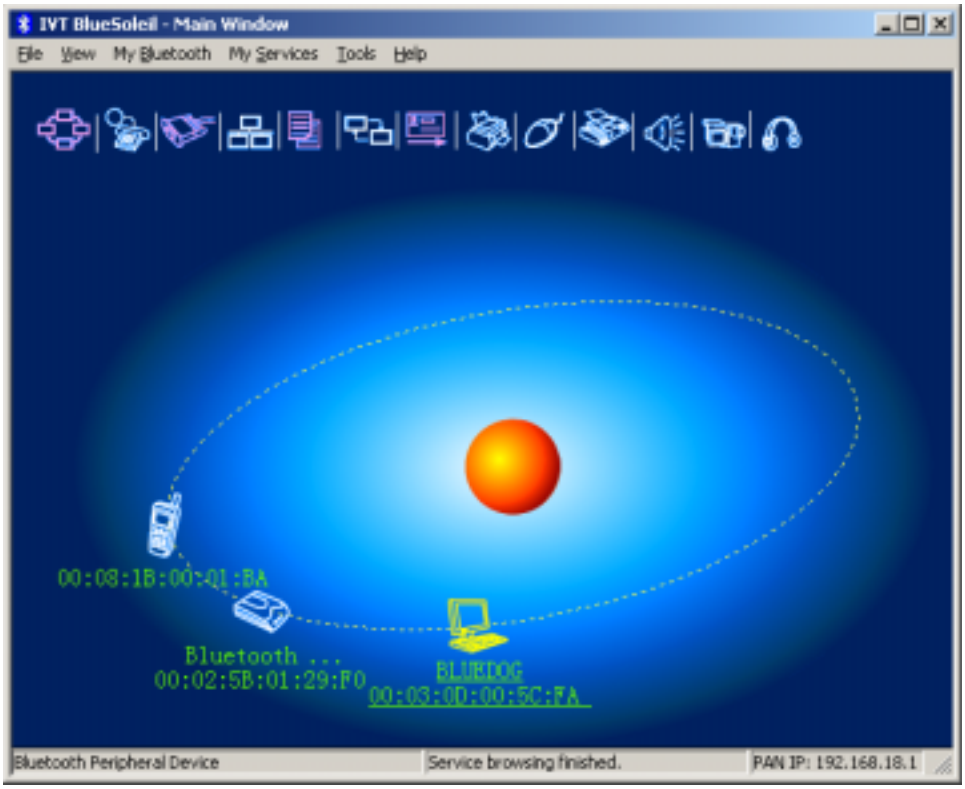


Figure 2.8 Devices can be add into the main window

### 2.5.2 Pairing your desktop or laptop with a Bluetooth Device

Bluetooth passkey may be asked if security level of either side of the connection is set to **High** and they are not paired devices. You can initiate the pairing from your own desktop or laptop or accept a request for pairing from the other device. Pairing allows you to avoid entering access information each time a connection is setup. Paired devices share a unique Link Key, which they exchange each time they connect.

**Pairing Procedures**

Double click the remote Bluetooth device you want to connect and you will be asked to enter the Bluetooth Passkey. Please type the Bluetooth Passkey in the Passkey field (Figure 2.9).

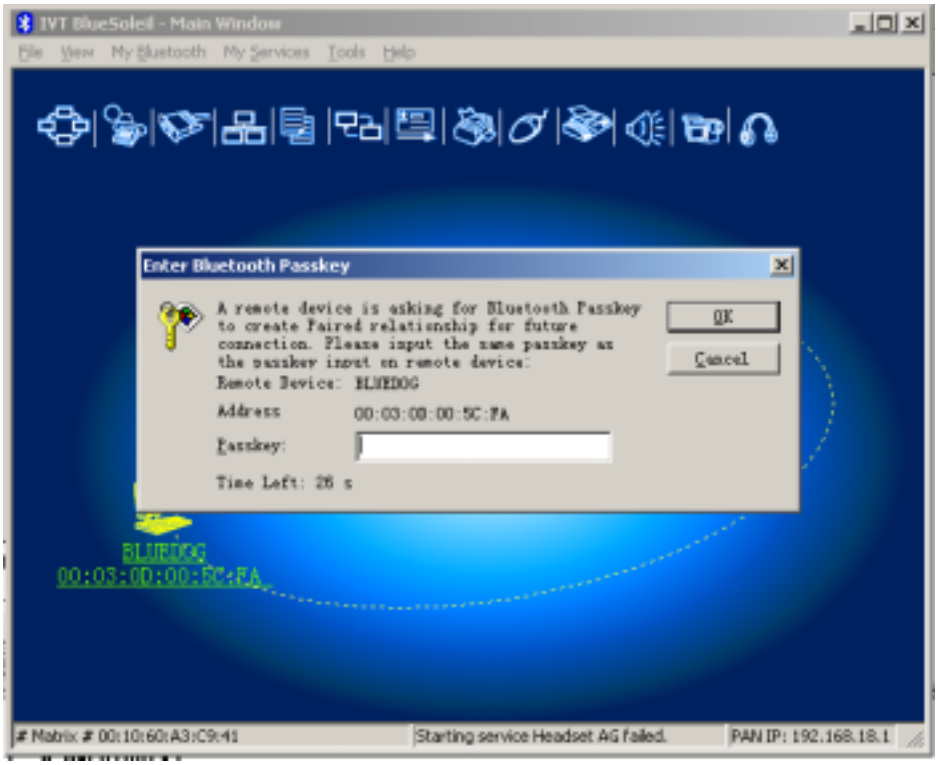
IVT BlueSoleil - Main Window
File View My Bluetooth My Services Tools Help
Enter Bluetooth Passkey
A remote device is asking for Bluetooth Passkey to create Paired relationship for future connection. Please input the same passkey as the passkey input on remote device.
Remote Device: BLUEDOG
Address 00:03:0D:00:5C:FA
Passkey:
Time Left: 26 s
OK
Cancel
BLUEDOG
00:03:0D:00:5C:FA
Starting service Headset AG failed.
PAN IP: 192.168.18.1

Figure 2.9 Input Passkey

Meanwhile, there will be a Bluetooth Passkey dialog box prompted on the remote laptop or desktop equipped with the Bluetooth device to ask you to enter passkey. The Bluetooth passkey should be the same between paired devices. If the pairing process succeeds, there will be a red check on the paired Bluetooth device icon (Figure 2.10).

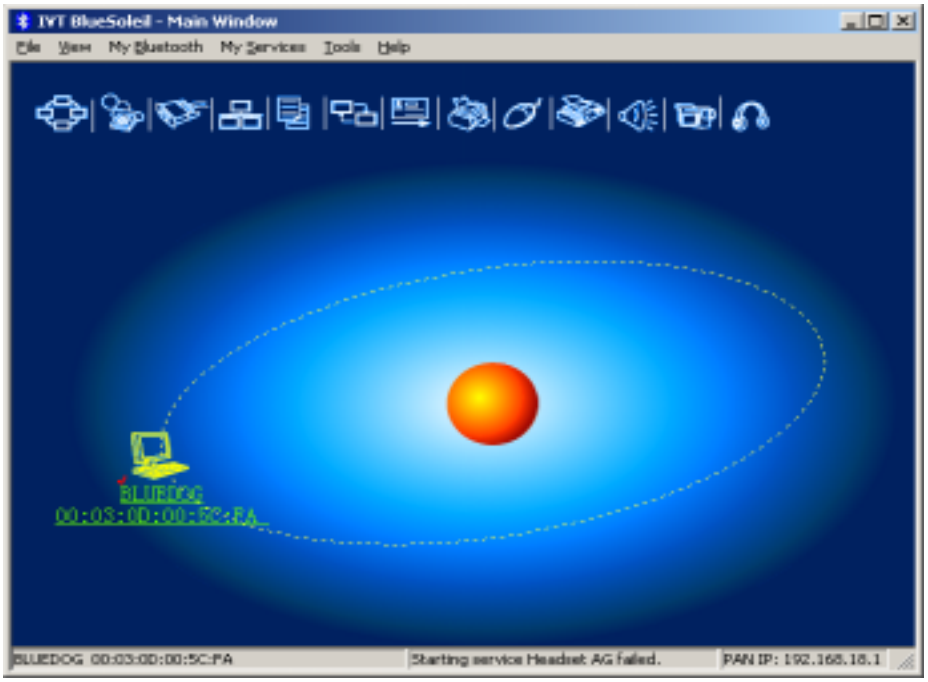


Figure 2.10 Device have been paired

## 2.6 Start Or Stop A Bluetooth Service Connection

After you have finished the pairing process, it means that you have built the connection between the client side and remote side. You may start to use the Bluetooth services the associated Bluetooth device provides.

You can refer to **4.2 Communication Between Two Computers** as a more detailed example.

### 2.6.1 Search Bluetooth Service

You can double click the associated Bluetooth device icon or right-click on the icon and select **Refresh Services** to find the service it provides. After service searching finishes, the services the remote device supports and the corresponding service icons on the top of the main window will change to be pink color.

### 2.6.2 Start A Remote Bluetooth Service Connection

You may right-click on the connected Bluetooth device, select **Connect** and highlight the service you want to use (Figure 2.11).

Or

Double click the pink profile icon (the service icon) you want to connect on the top of the Main Window.

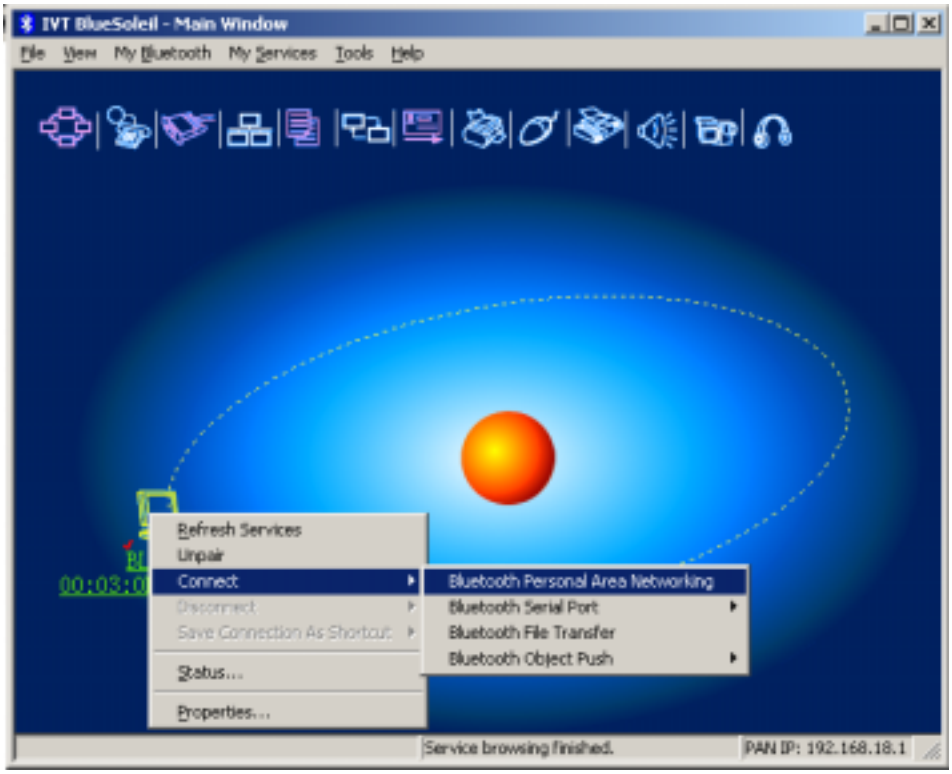


Figure 2.11 Connect to the remote service

Connection will be setup. After connection is OK, the remote device and the service icon will turn green.

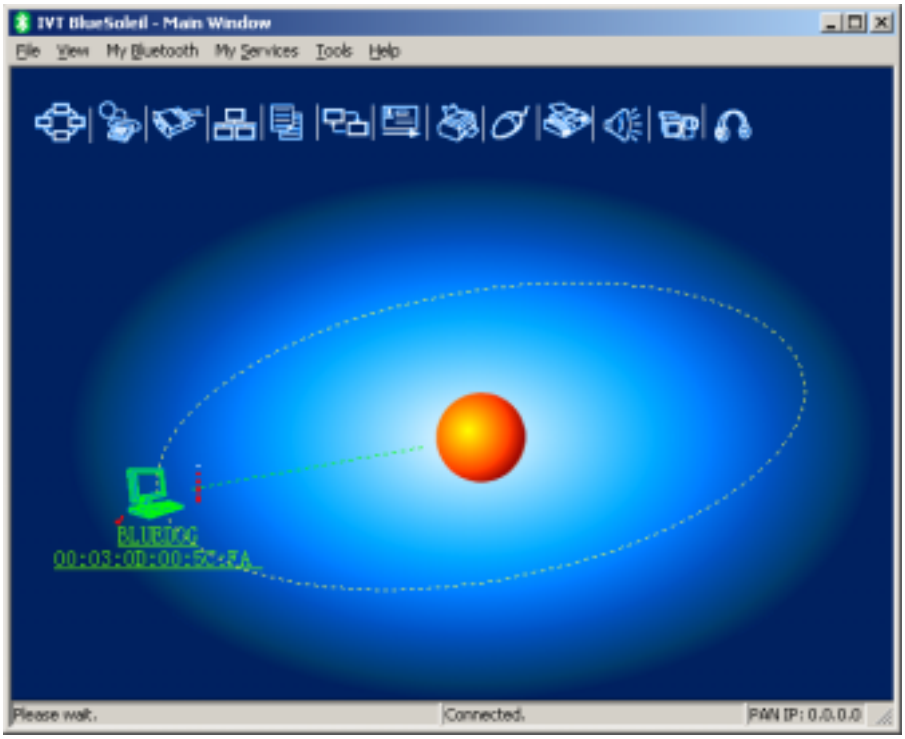


Figure 2.12 The connection has been established

### 2.6.3 Stop A Bluetooth Service Connection

There are two ways to stop the service:

- Select a started service and right click the service. On the popup menu, select **Stop Service**. The service icon turns white. The service is stopped.
- Select a started service. Select **My Services** menu and highlight **Stop Service**. The service icon turns white. The service is stopped.

# 3 Bluetooth Security

## 3.1 Introduction

Bluetooth introduces security features to protect users from unauthorized access of local data and encrypt data in the air. Three levels of security is defined in Bluetooth:

- Low (no security): Local device will not initiate any security procedure.
- Medium (service-level enforced security): Local device does not initiate security procedures before user access local Bluetooth services. This mode allows different and flexible access policies for Bluetooth applications, especially running applications with different security requirements in parallel.
- High(device level enforced security): Local device initiates security procedures as long as the remote Bluetooth device set-up link, for example, browsing local services etc.

Following table shows the security when Bluetooth client device access another Bluetooth device that provides services.

| | **Server in Security Low** | **Server in Security Medium** | **Server in Security High** |
|---|---|---|---|
| **Client in Security Low** | No security. | Can browse services. Accessing service depends on the settings of local services. | High. Security is enforced at link level before setup connection. |
| **Client in Security Medium** | No security. | Can browse services. Accessing service depends on the settings of local services. | High. Security is enforced at link level before setup connection. |
| **Client in Security High** | High. Security is enforced at link level before setup connection. | High. Security is enforced at link level before setup connection. | High. Security is enforced at link level before setup connection. |

When security is enforced at device level or a local service requires, an **Authentication** procedure is required. Both of Bluetooth client and server side need enter a Bluetooth passkey to confirm the client user's identity.

To avoid entering Bluetooth passkey every time, two Bluetooth devices can be set up paring relationship, that is to save the relationship after **Authentication.** After **Authentication**, the Bluetooth link can be encrypted if necessary.

**Authorization** is used in Security Medium (service-level enforced security), to set which devices can use the local service and which cannot. The following are some concept of bluetooth security:

- **Authentication**
  Authentication is used to verify identity; it requires a passkey or link key from the remote device. When an Authentication procedure is initiated by either local device or remote device, a dialog is shown to ask for entering Bluetooth Passkey. Only when passkeys from both sides are identical, can authentication succeed.
- **Authorization**
  Bluetooth authorization is the procedure to decide whether you are going to allow some other Bluetooth devices to use Bluetooth services on your Bluetooth devices. This procedure takes function in Bluetooth security Medium and applies to Bluetooth services only.
- **Encryption**
  When a Bluetooth link is encrypted, data are encrypted into unreadable data using a secret key or password before they are sent in the air. Data are decrypted after they reach the remote device using the same key or password that was used to encrypt it.
- **Pairing Devices**
  Pairing allows you to avoid entering access information each time a connection is setup. Paired devices share a unique Link Key, which they exchange each time they connect.

## 3.2 BlueSoleil Security Configuration

The BlueSoleil security configuration involves the policy setting of the local device's security, it comprises the following items:

- General Property Page
- Devices Property Page
- Services Property Page

### 3.2.1 General Property Page

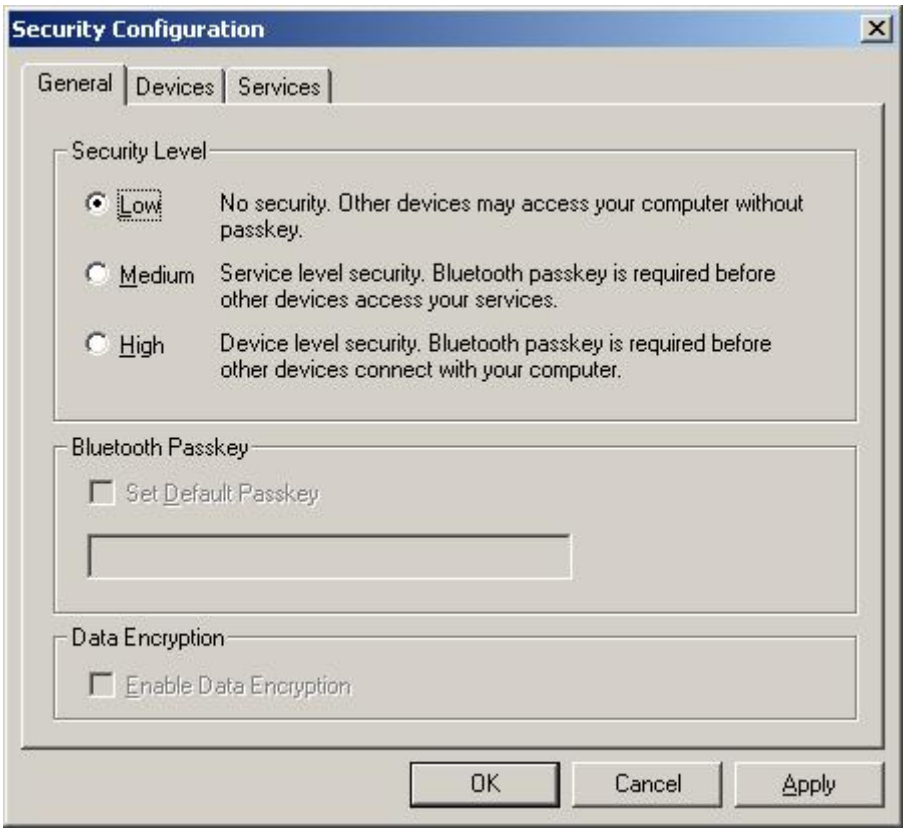


Figure 3.1: Security Configuration Dialog

**Security Level**

- Low
  When Low is checked, normally other devices may access your device freely, which means that they don't need to input the Bluetooth passkey. However, if the other device set its own security level to High, you are also required to input the passkey.
- Medium
  The medium level is service level security. You can assign access right for specified service to different devices. For more detail, to see Services Property Page.
- High
  When other devices connect to your device or your device connects with other devices, you are required to input a Bluetooth passkey. If your device has been paired with the other device before connecting, you can connect with the other device directly. (A link key has been created and stored for the paired relationship. Link key is used instead of Bluetooth passkey here.)

**Bluetooth Passkey**

- Set Default Passkey
  If you check Set Default Passkey, you needn't input passkey manually. BlueSoleil will use the passkey inputted in the edit box below to connect with other devices.

**Data Encrypt**

- Enable Data Encryption
  If the item is checked, the transmitted data will be encrypted into an unreadable format.

### 3.2.2 Devices Property Page

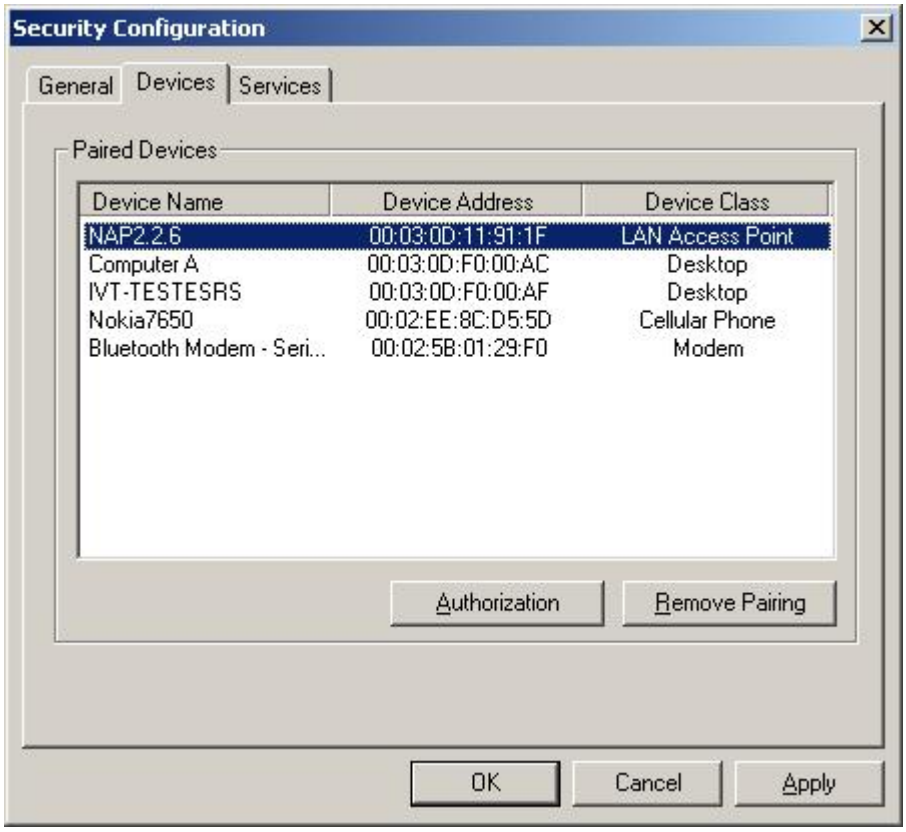


Figure 3.2: Devices Property Page

when you establish connection with a paired device, you needn't input a passkey again. A link key has been created and stored for the paired relationship.

**How to pair with another device**

- Automatically
  If a passkey is required before connection, devices will pair automatically the first time they connect (a passkey must be successfully exchanged).
- Manually
  In the main window of BlueSoleil, right click a device, select Pair Device from the popup menu, and then input a same passkey on both side.

**How to unpair with another device**

Manually
1. Click Remove Pairing button in this page.
2. In the main window of BlueSoleil, right click a paired device, select Unpair from the popup menu.

**Authorization for paired devices**
Only when the Security Level is set as Medium in General Property Page, the Authorization button is enabled. Select a device in Paired Devices list, then click Authorization button to show an authorization dialog.

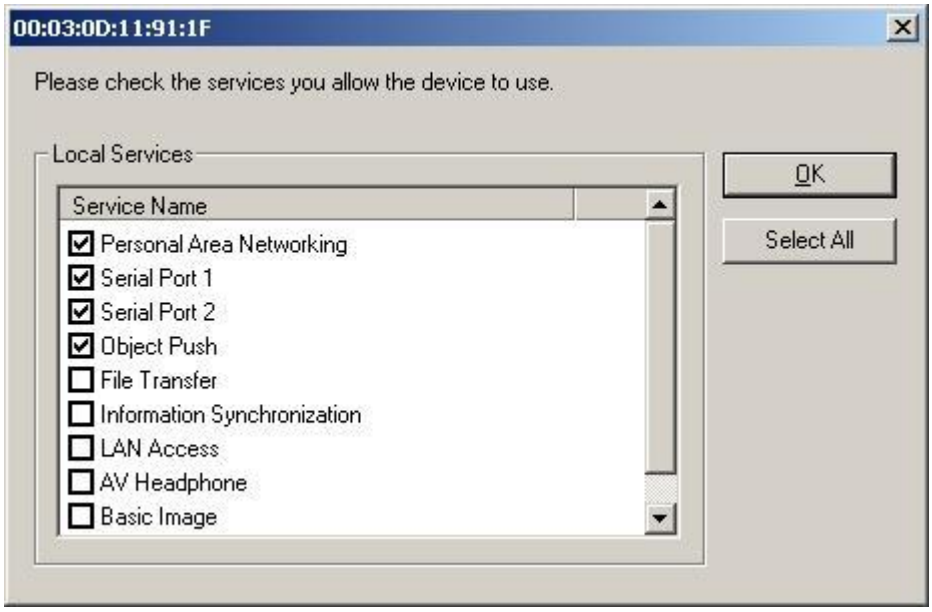


Figure 3.3: Authorization Dialog

The services shown in Service Name list are those need Authentication. Configure in Services Property Page. If a service name is checked, the device will be a trusted device for the service.

### 3.2.3 Services Property Page

Only when the Security Level is set as Medium in General Property Page, the property page is enabled.

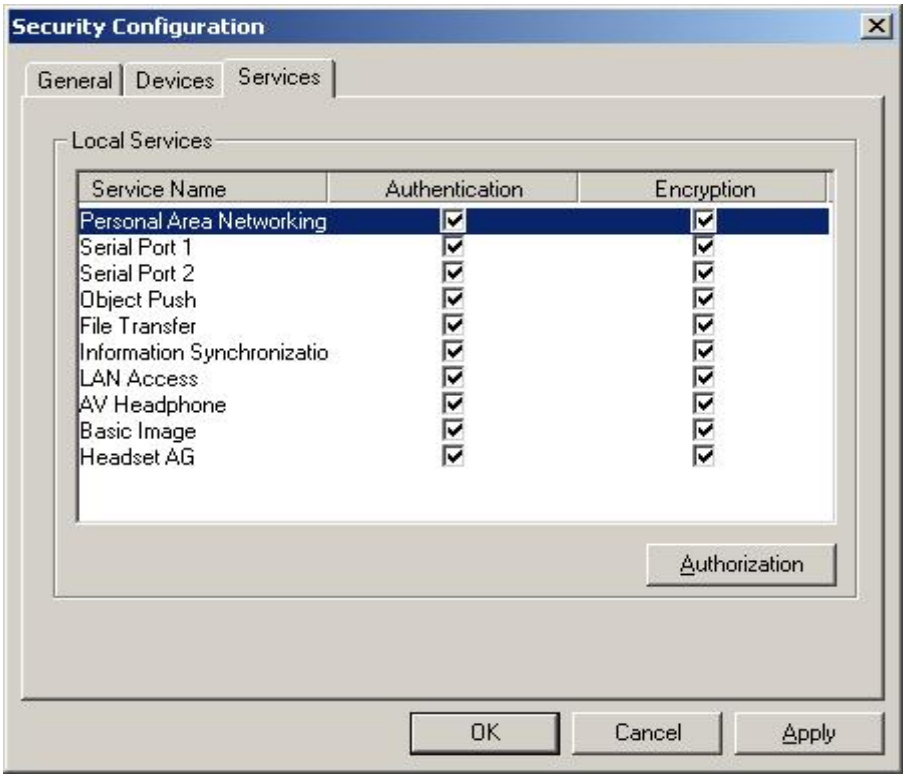


Figure 3.4: Services Property Page

**Authentication**

- Checked
  If you check the Authentication box after a service name, when a not paired device access the service, a passkey is required.
- Not Checked
  The security level of the service will be Low. Any device may access the service freely.

**Encryption**
If check Encryption after a service name, the transmitted data for the service will be encrypted into an unreadable format.

**Authorization for services**
Select a service which need Authentication, then the Authorization button is enabled. Click Authorization button to show an authorization dialog for the specified service.

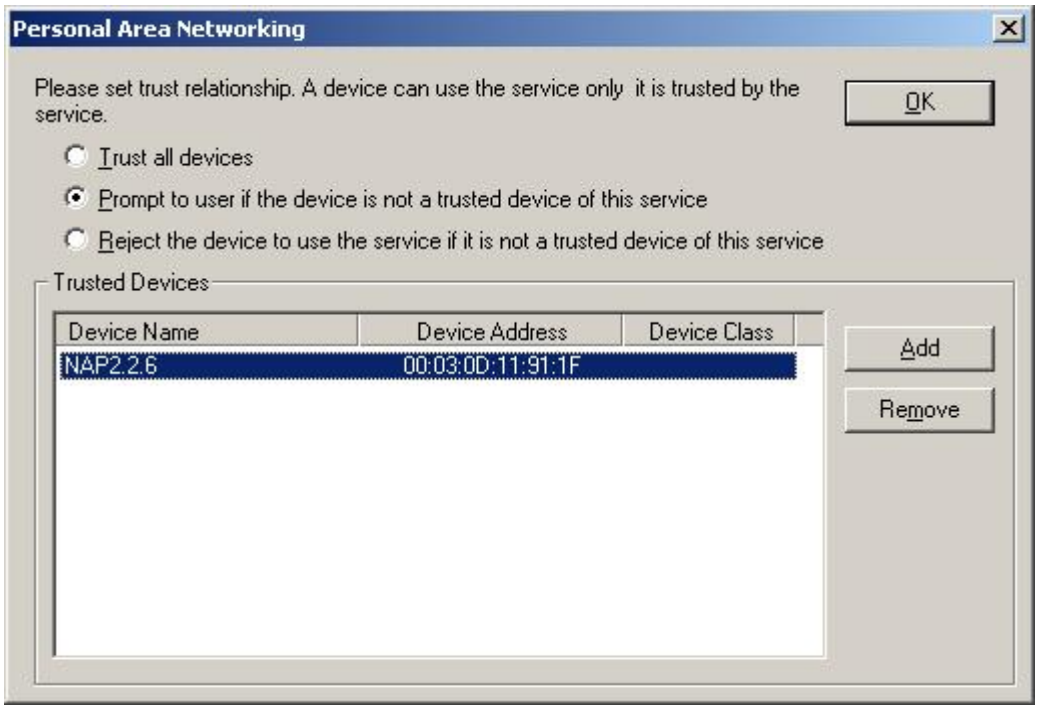
Personal Area Networking
Please set trust relationship. A device can use the service only it is trusted by the service.
OK
Trust all devices
Prompt to user if the device is not a trusted device of this service
Reject the device to use the service if it is not a trusted device of this service
Trusted Devices
Device Name
Device Address
Device Class
NAP2.2.6
00:03:0D:11:91:1F
Add
Remove

Figure 3.5: Authorization for Services

**Trusted Devices**
The devices are trusted by the specified service. Click Add button to add devices into Trusted Devices list. Only a paired and trusted device can use the service freely.

- **Trust all devices**
  Set all devices trusted.
- **Prompt to user if the device is not a trusted device of this service**
  If a device attempting to access the service is not a trusted device, a prompt dialog will popup on the server side to inquire user if accepting the connection.
- **Reject the device to use the service if it is not a trusted device of this service**
  If a device attempting to access the service is not a trusted device, the device will be rejected to established connection directly.

# 4 Personal Area Networking

## 4.1 Introduction

The Bluetooth Personal Area Networking (PAN) is a Bluetooth application, which enables devices to form an ad-hoc network or to access a remote network through a network access point.

The PAN application can be used in the following scenarios:

- Two or more computers (or PDAs) can be connected to form a Group Ad-hoc Network (GN) and can visit each other using Windows **Network Places** or any application based on TCP/IP. (Figure 4.1)

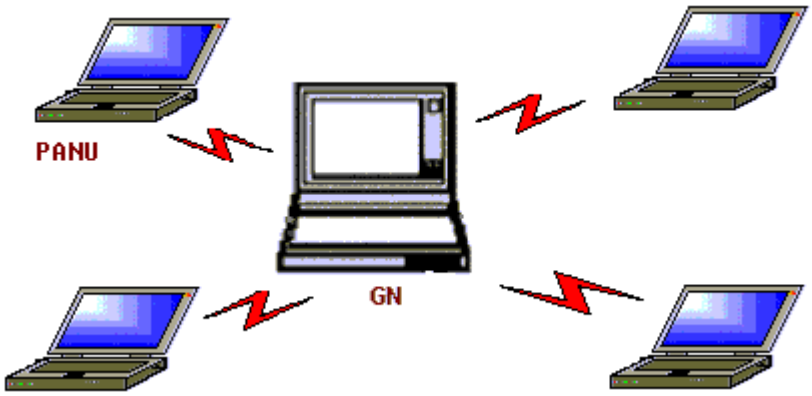


Figure 4.1: Group Ad-hoc Network

- Two or more computers (or PDAs) can access a Local Area Network through a Network Access Point (NAP) bridge. (Figure 4.2) After the computers or PDAs connect to the PAN-NAP, they become members of the LAN and can communicate with other computers in the LAN directly.

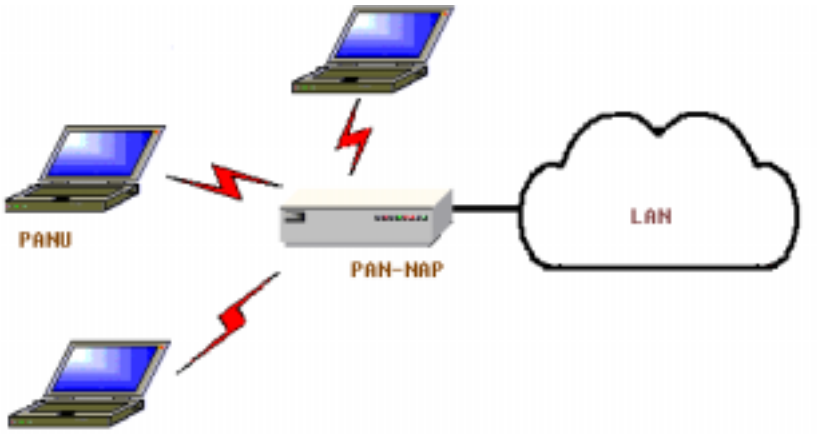


Figure 4.2: Access LAN through PAN-NAP

- Two or more computers (or PDAs) can access a Local Area Network through BlueSoleil™. （Figure 4.3） After the PANUs connect to the BlueSoleil NAP, they become members of the LAN and can communicate with other computers in the LAN directly.

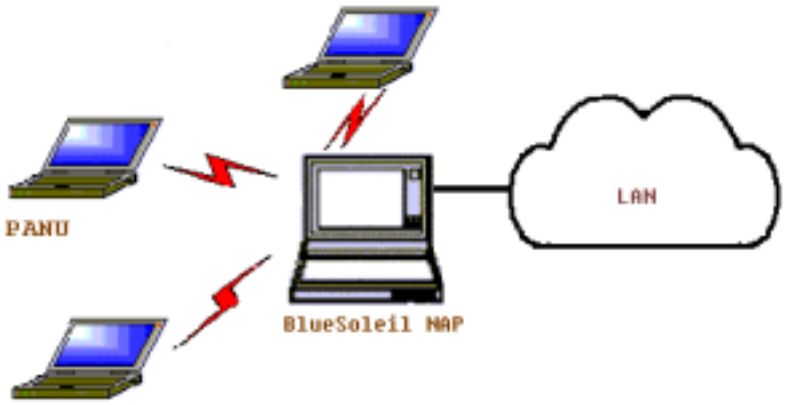


Figure 4.3: Access LAN through BlueSoleil NAP

- Two or more computers (or PDAs) can access the Internet through BlueSoleil™. (Figure 4.4) In this scenario, there are two network adapters for the BlueSoleil NAP: the WAN adapter is connected to the Internet and the BT network adapter is used for Bluetooth connections from the PANUs. The BlueSoleil NAP acts as a TCP/IP gateway, and the PANUs can access the Internet through the BlueSoleil NAP.

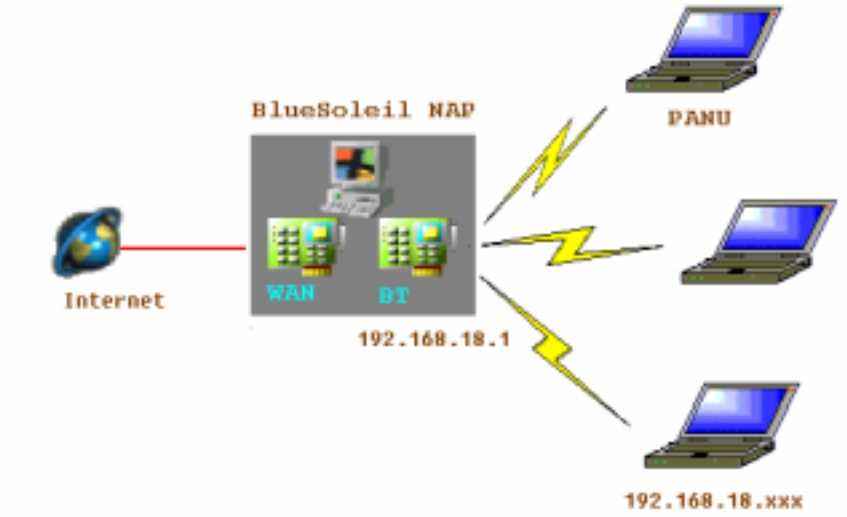


Figure 4.4: Access Internet through BlueSoleil NAP

Each of these scenarios is now covered in more detail.

## 4.2 Communication Between Two Computers

This section outlines the steps involved in connecting two computers, Computer A and Computer B.

| | |
|---|---|
| Computer A: | Computer B: |
| Desktop | Notebook/ Laptop |
| A Bluetooth Device | A Bluetooth Device |
| IVT BlueSoleil™ | IVT BlueSoleil™ |

Step 1: Insert Bluetooth Devices in both computers and start BlueSoleil™ in both computers.

Step 2: Set device name of each computer to anything you want. Here they are named Computer A and Computer B.

- In the BlueSoleil™ Main Window of Computer A, click **My Bluetooth | Property…**. Enter 'Computer A' in the device name field in the **My Bluetooth Device** window.
- Repeat for Computer B.

Step 3: Set the Security Level.

- Click My Bluetooth| Security, the Security Configuration panel pops up.
- On the **Security Configuration** panel, select **High** in Security Level.
- **Note:** If you check the **Fixed Passkey** and input a Bluetooth passkey, this passkey will be used as the default passkey. The other computer will then have to provide the same passkey during the connection procedure if it wants to connect to this computer.

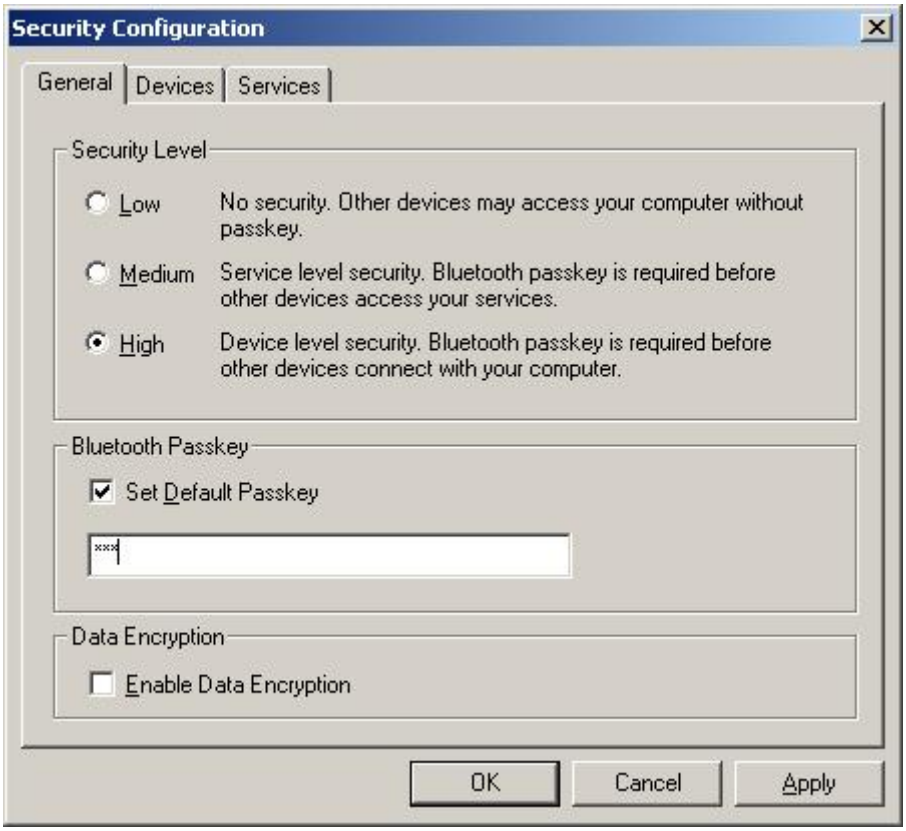


Figure 4.5: Security Configuration

Step 4: Start the PAN service on Computer A.

- In the BlueSoleil™ Main Window, click **View | Service Window.**
- In the Service Window, right-click the Personal Area Networking icon. Choose **Properties** to configure my PAN service as **Set up Bluetooth Personal Area Network.** (Figure 4.6) If the item of **Enable DHCP Server** is checked, a DHCP server will be started

on the GN side. (Notes: To use DHCP, the BT Network Adapter on the client side must be set to obtain an IP address automatically. The IP address is in the form of 192.168.18.xxx.)

- Click **Apply** or **OK** button to save the configuration.
- Right-click the Personal Area Networking icon again, then choose **Start Service.** (Figure 4.7)

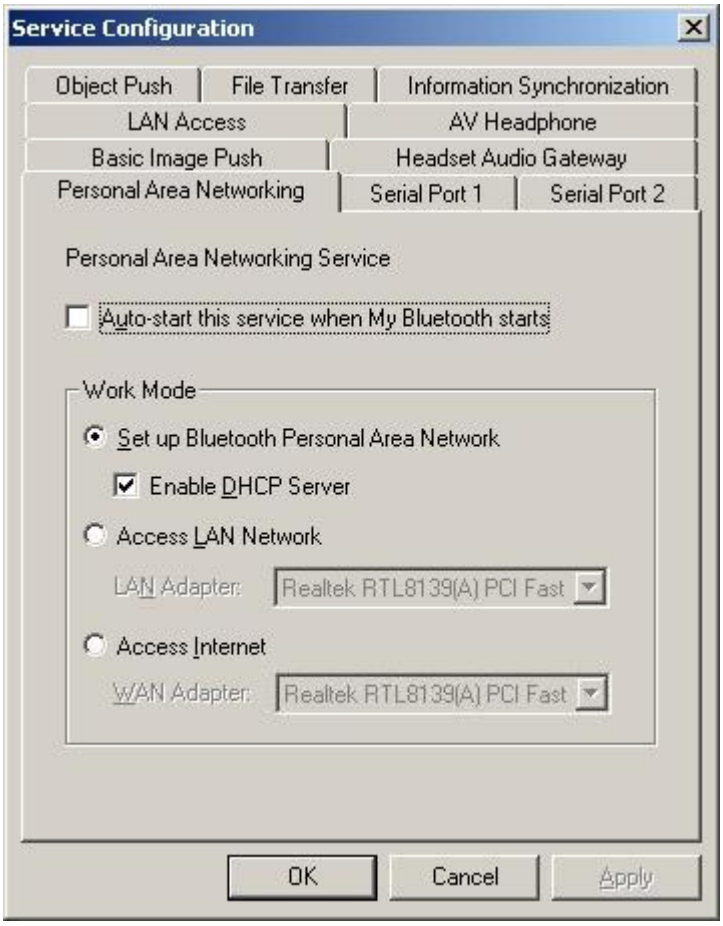


Figure 4.6: Set up Bluetooth Personal Area Network Configuration

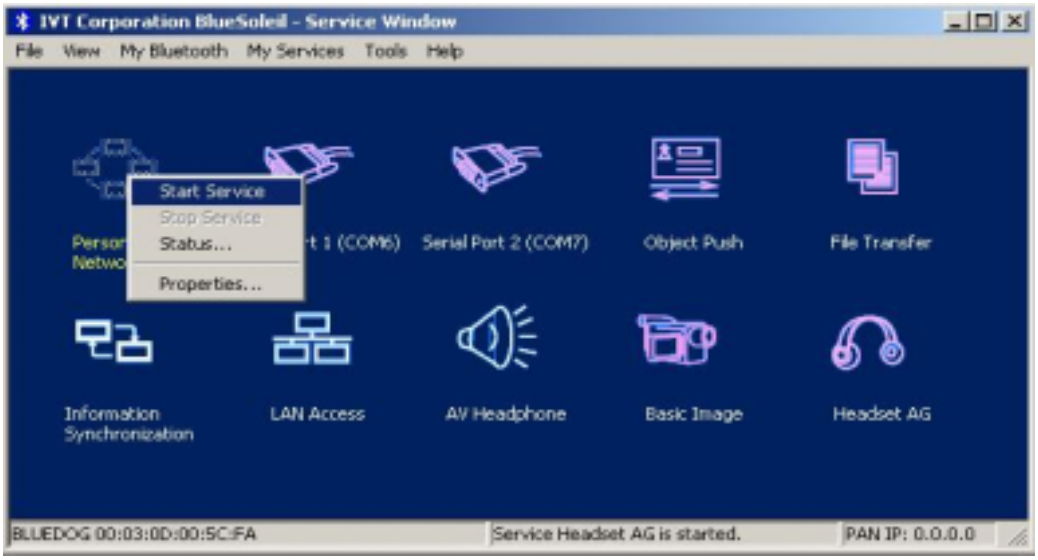


Figure 4.7: Start PAN Service on Computer A

Step 5: Search for Computer A on Computer B.

- Double-click the My Device Icon (center ball). The surrounding discovered Bluetooth devices appear.
- Check to see if Computer A appears. If it does not appear, double-click the My Device Icon again. Repeat the operation until you find Computer A.

Step 6: Find the PAN service on Computer A.

- Double-click the Computer A device icon on Computer B.
- Enter the Bluetooth passkey (if security is set to **High** on either side) to start the authenticating process. The **Enter Bluetooth Passkey** window pops up on Computer A. Input any characters or numbers, e.g. "12". The **Enter Bluetooth Passkey** window pops up on Computer B. Input exactly the same characters or numbers as you input for Computer A, e.g. "12". (Figure 4.8)
- Once authentication is complete, the PAN service is found.

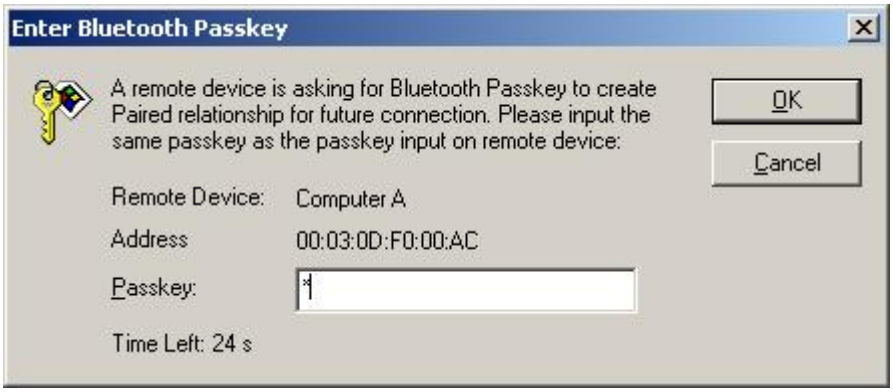
Enter Bluetooth Passkey
A remote device is asking for Bluetooth Passkey to create Paired relationship for future connection. Please input the same passkey as the passkey input on remote device:
OK
Cancel
Remote Device: Computer A
Address 00:03:0D:F0:00:AC
Passkey:
Time Left: 24 s

Figure 4.8: Input passkey

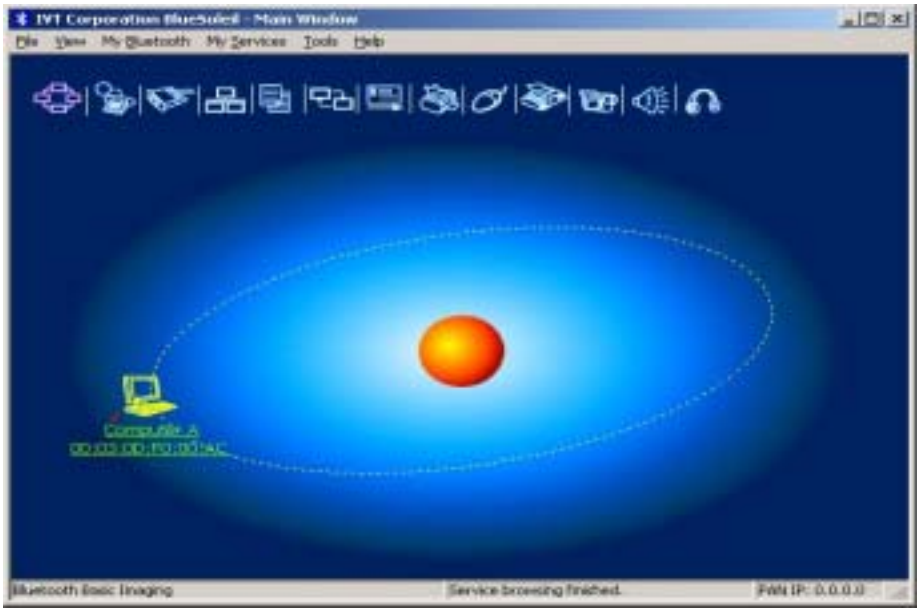
IVT Corporation BlueSoleil - Main Window
File View My Bluetooth My Services Tools Help
Computer A
Bluetooth Basic Imaging
Service browsing finished.
PAN IP: 0.0.0.0

Figure 4.9: PAN service is found

Step 7: Connect to Computer A.

- Right-click the PAN service icon; select **Connect** on the pop-up menu. (Figure 4.10)
- The connection is established successfully ( Figure 4.11). Wait until the valid IP address is shown on the bottom right status bar on both Computer A and Computer B. If you enable the DHCP server on the server side, the IP address appears as "192.168.18.xxx". If not, the IP address appears as "169.254.xxx.xxx".

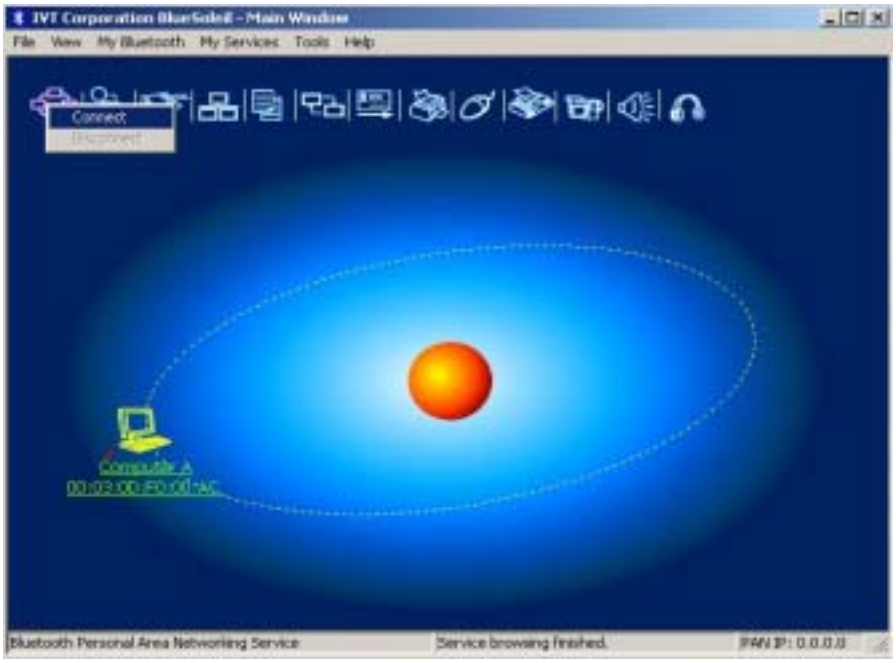


Figure 4.10: Connect to PAN Service

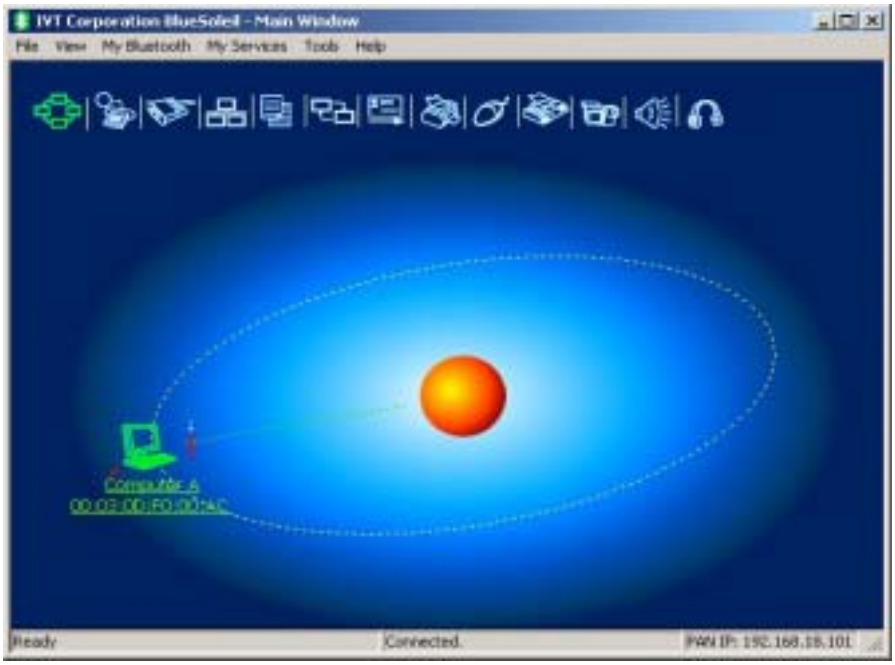


Figure 4.11: Connection is established successfully.

Step 8: Computer A and Computer B are now connected. On Computer B, go to **Windows** | **My Network Places** to find Computer A and copy files. Figure 4.12 shows where to input Computer A's name. In Figure 4.12, Computer A is named 'mike'.

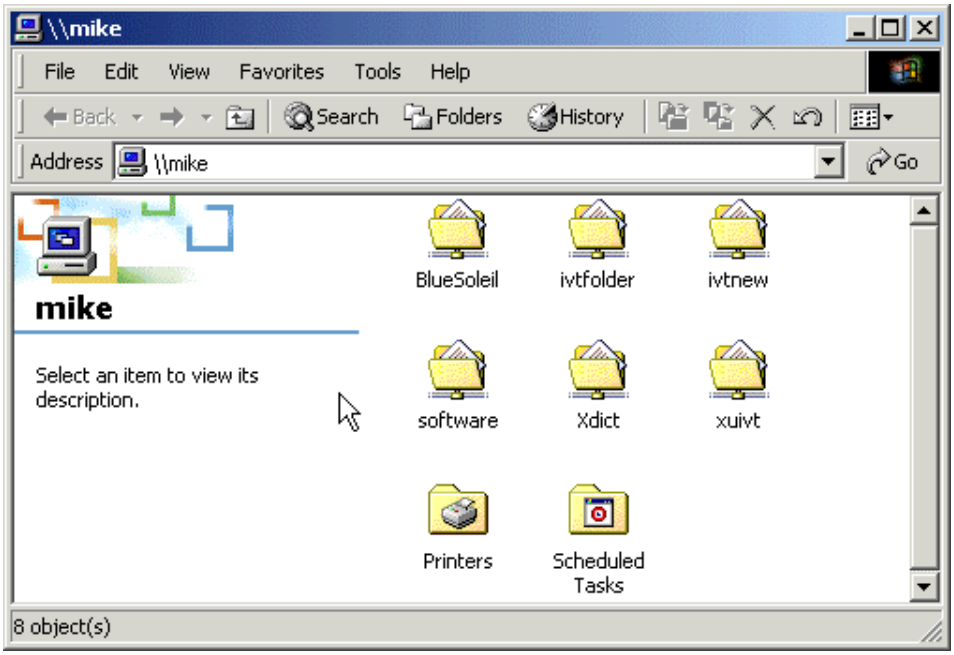


Figure 4.12: Find Computer A in My Network Places

Step 9: To disconnect the PAN connection, disconnect from either Computer A or from Computer B.

- On Computer B, right-click on the PAN service icon and choose **Disconnect.** (Figure 4.13)

- On Computer A, right-click on the PAN service icon in service window and choose **Stop Service**.

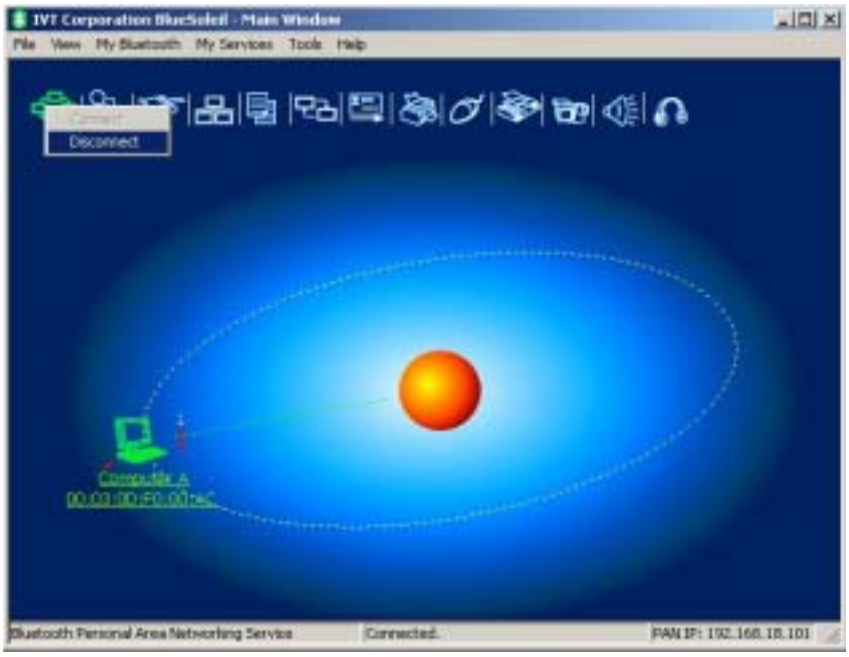
IVT Corporation BlueSoleil - Main Window
File View My Bluetooth My Services Tools Help
Disconnect
Bluetooth Personal Area Networking Service
Connected.

Figure 4.13: Disconnect the PAN service from Computer B

Advanced Usage:

- Computer A is now the center node. Other computers, for example, Computers C, D and E, can connect to Computer A with BlueSoleil™ following the same steps as those for Computer B. Computer A supports up to 7 connections at the same time.
- Computer A, B, C, D and E can access each other using the Windows **Network Places**. This forms a Bluetooth ad-hoc networking environment.

**Note:** It takes about 1 minute before an IP address can be obtained on the client side (Computer B) unless you select to enable the DHCP server on the server side (Computer A).

## 4.3 Access LAN Through PAN-NAP

This section outlines the steps involved in accessing a Local Area Network (LAN) through a PAN-NAP.

| | |
|---|---|
| Computer A:<br><br>Notebook/Laptop<br><br>A Bluetooth Device<br><br>Windows 2000<br><br>IVT BlueSoleil™ | Ethernet PAN-NAP B:<br><br>Ethernet PAN-NAP |

Step 1: Plug the LAN cable into the PAN-NAP (Ethernet PAN-NAP B) and power it on

it on.

Step 2: Insert a Bluetooth Device into the computer.

Step 3: Start BlueSoleil™ in the computer.

Step 4: Connect Computer A to Ethernet PAN-NAP B

1. Go to Computer A, double click My Device Icon until you find the device Ethernet PAN-NAP B.
2. Find the PAN service on Ethernet PAN-NAP B by double clicking the Ethernet PAN Bridge B device icon. Enter the Bluetooth passkey (if security is set to **High** on either side) to start authentication. The **Enter Bluetooth Passkey** window pops up on Computer A. Input the same passkey as the one on the Ethernet PAN-NAP B. (Figure 4.8)
3. Right-click the PAN service icon, and then choose **Connect**. (Figure 4.15)

♦ **Note:** The passkey is provided by the PAN-NAP provider and the default value is usually "root". It can be modified by the software associated with the PAN-NAP. For more details please refer to the user documentation provided by the PAN-NAP provider.

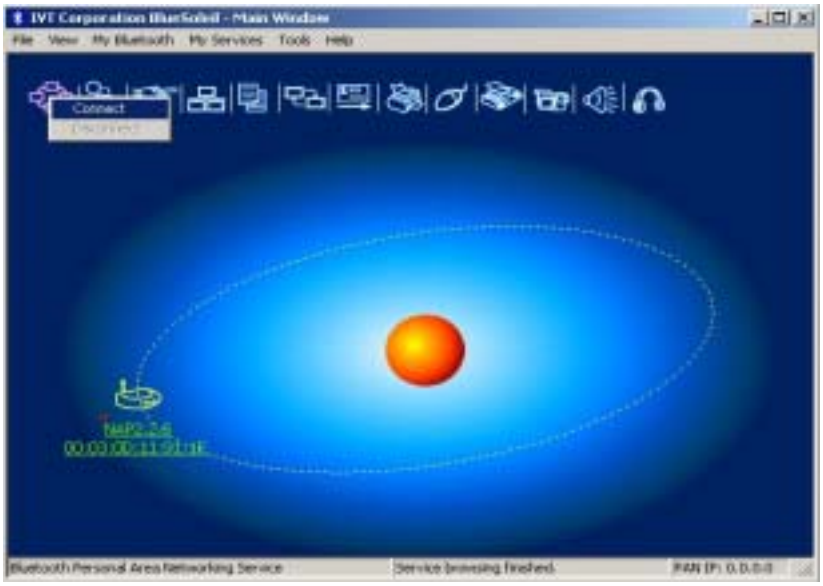
IVT Corporation BlueSoleil - Main Window
File View My Bluetooth My Services Tools Help
Connect
Disconnect
Bluetooth Personal Area Networking Service
Service browsing finished.

Figure 4.15: Choose Connect

♦ The connection is established successfully (Figure 4.16). Wait until the valid IP address appears in the bottom right status bar on Computer A.

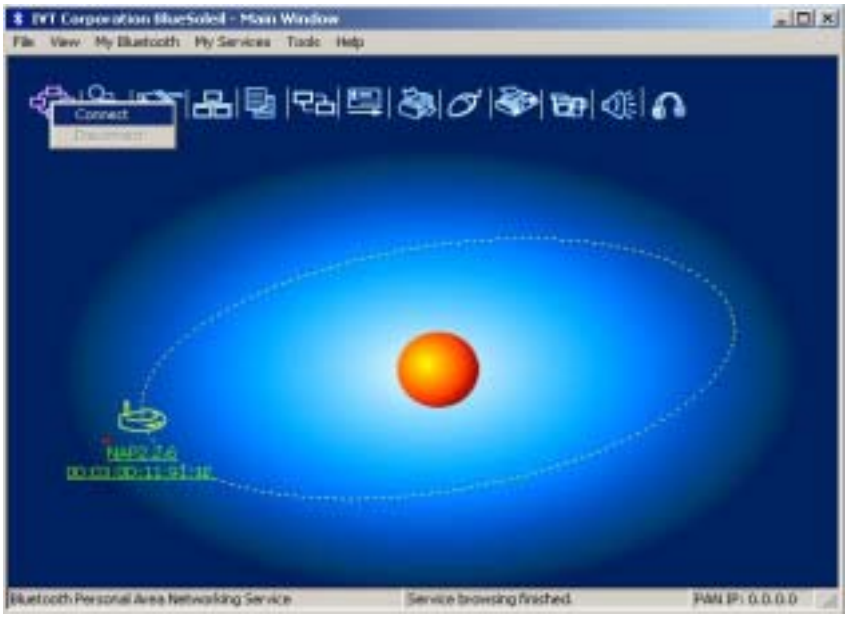


Figure 4.16: Successful connection to PAN-NAP

Step 5: IP address configuration of the BT Network Adapter on Computer A.

- Right-click on **My Network Places** and select **Properties**. (Figure 4.17)
- Right-click the Local Access Connection 2 on the **Network and Dial-up Connections** window, and select **Properties**. (Figure 4.18)

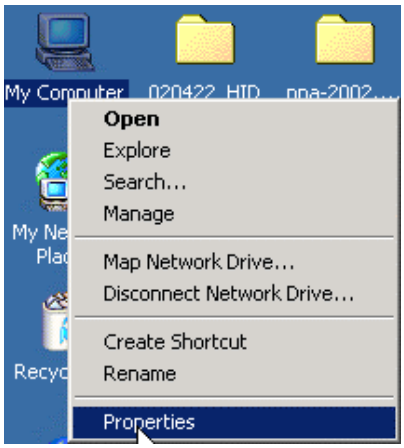


Figure 4.17: Right-click on My Network Places

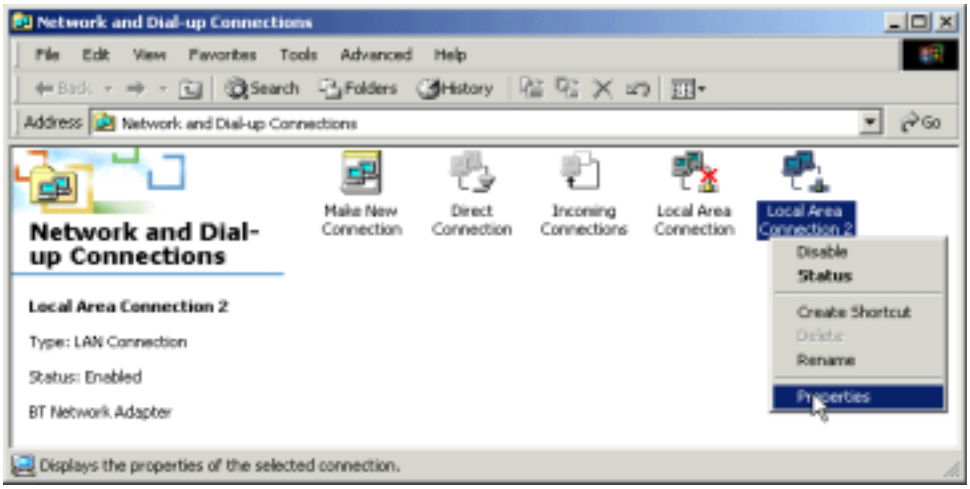


Figure 4.18: Network and Dial-up Connections

- On the **Local Area Connection 2 Properties** window, select the Internet Protocol (TCP/IP) item and click on **Properties**. (Figure 4.9)
- Set the IP address to be in the same subnet as the other computers in the LAN. (Figure 4.20).

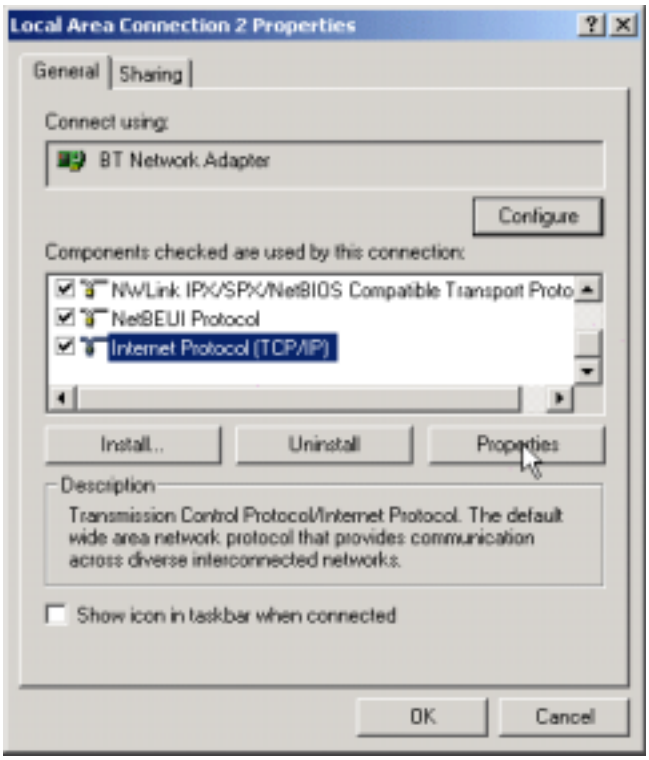


Figure 4.19: Find Internet Protocol (TCP/IP)

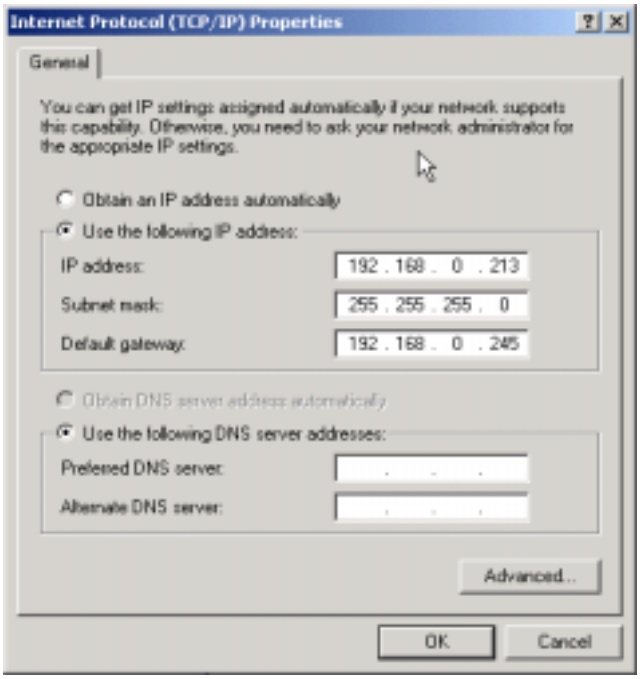
Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
192 . 168 . 0 . 213
Subnet mask:
255 . 255 . 255 . 0
Default gateway:
192 . 168 . 0 . 245
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

Figure 4.20: Set the IP address

**Note:** When Computer A connects to Ethernet PAN-NAP B it accesses the LAN as if it is attached to the LAN directly. The network properties of Computer A must be the same as the computers in the LAN, that is, Computer A and the computers in the LAN must be in the same subnet and have the same subnet mask. For example, if the computers in the LAN use DHCP for IP addressing, then Computer A needs to be configured to use DHCP. If the IP address is configured manually on the computers in the LAN, then Computer A also needs to be configured manually.

## 4.4 Access LAN Through IVT BlueSoleil™

This section outlines the steps involved in accessing a Local Area Network (LAN) through IVT BlueSoleil™.

| | |
|---|---|
| Computer A: | Computer B: |
| Desktop | Notebook/Laptop |
| A Bluetooth Device | A Bluetooth Device |
| IVT BlueSoleil™ | IVT BlueSoleil™ |
| Network Adapter connecting to the LAN | |

| | |
|---|---|
| Step 1: | ♦ Start IVT BlueSoleil™ on both Computer A and Computer B. Please<br>♦ refer to "Section 3.2:Communication Between Two Computers", and complete Steps 1 to 4. |
| Step 2: | Start the PAN service on Computer A.<br>♦ In the BlueSoleil™ Main Window, click **View \| Service Window.**<br>♦ In the Service Window, right-click the Personal Area Networking icon. Choose **Properties** to configure my PAN service as **Access LAN Network** and select a physical adapter, through which Computer A connects to a LAN, as the **LAN Adapter** (Figure 4.21).<br>♦ Click **Apply** or **OK** button to save the configuration.<br>♦ Right-click the Personal Area Networking icon again, and choose **Start Service.** |
| Step 3: | On Computer B, make sure that the BT adapter has the same configuration with computers in the LAN. (Refer to Step 6 in "Section 3.3: Access LAN Through PAN".) |
| Step 4: | Setup connection between Computer A and Computer B. Please refer to "Section 3.2:Communication Between Two Computers", and complete Steps 6 to 8. |
| Step 5: | ♦ Computer B can now access the LAN. |

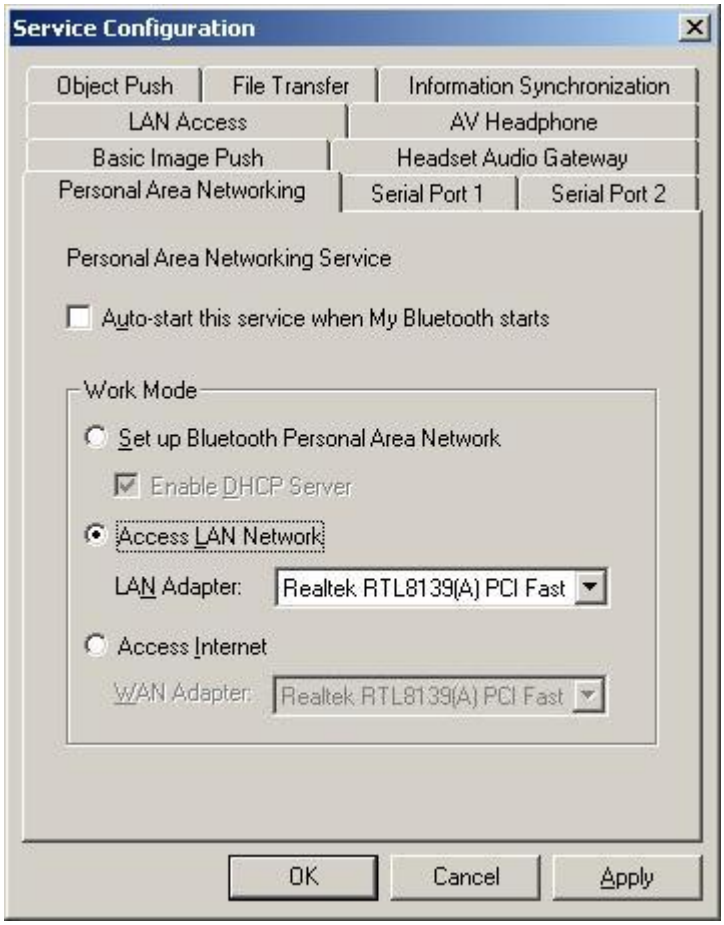

Figure 4.21: Access Outside LAN Network Configuration

## 4.5 Access Internet through IVT BlueSoleil™

The following sections outline how to enable Computer B to access the Internet through Computer A.

| Computer A: | Computer B: |
|---|---|
| Desktop | Notebook/ Laptop |
| A Bluetooth Device | A Bluetooth Device |
| Windows 2000 | Windows 2000 |
| IVT BlueSoleil™ | IVT BlueSoleil™ |
| Network Adapter connecting to the Internet | |

Step 1:

- Make sure Computer A can access Internet. Start IVT BlueSoleil™ on both Computer A and Computer B. Please refer to "Section 3.2:Communication Between Two Computers", and complete Steps 1 to 4.

Step 2: Start the PAN service on Computer A.

1. In the BlueSoleil™ Main Window, click **View | Service Window.**
2. In the Service Window, right-click the Personal Area Networking icon. Choose **Properties** to configure my PAN service as **Access Internet** and select a local physical adapter as the **WAN Adapter** (Figure 4.22), through which Computer A can access Internet. It automatically enables NAT (Network Address Translation, please refer to **Windows Help Topic**) function and a DHCP server. (Notes: The **BT Network Adapter** on the client side must be set to obtain an IP address automatically. The IP address is in the form of 192.168.18.xxx.)
3. Click **Apply** or **OK** button to save the configuration.
4. Right-click the Personal Area Networking icon again, and choose **Start Service.**

Step 3: Setup connection between Computer A and Computer B. Please refer to "Section 3.2:Communication Between Two Computers", and complete Steps 6 to 8.

Step 4:

- After Computer B gets an IP address as "192.168.18.xxx", Computer B can now access the Internet through Computer A.

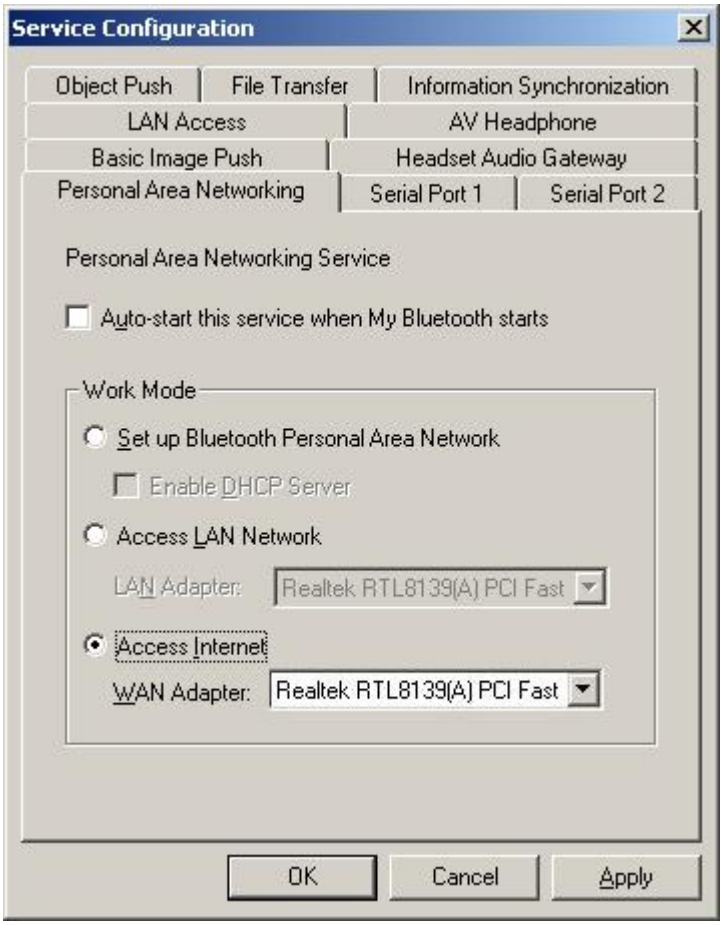

Figure 4.22: Access Outside WAN Network Configuration

Advanced Usage:

- Computer A is now the center node of the network. Other computers with BlueSoleil™ installed, for example, Computers C, D and E, can connect to Computer A following the same steps as those for Computer B and access the Internet through Computer A. Computer A supports up to 7 connections at the same time.
- Computers A, B, C, D and E can access each other using the Windows **My Network Places** and form a Bluetooth ad-hoc networking. Computers B, C, D and E can then access the Internet through Computer A.

Note:

- Computer B also can share a dial-up connection of Computer A, in this case, please set up a dial-up connection for Computer A at first. While working with a dial-up connection, if the dial-up connection is destroyed for some reason, please restart the service after the dial-up connection established again.
- The **Internet Connection Sharing (ICS) of Windows** (refer to **Windows Help Topic**) can also be used on computer A for computer B to access the Internet. In this situation, the PAN service configuration must be set as **Bluetooth Group Ad-hoc Network** without DHCP Server enabled.

## 4.6 PAN Configuration

### 4.6.1 My PAN Service

In the BlueSoleil™ Service Window, right-click the Personal Area Networking icon. On the pop-up menu, select **Properties** to configure my PAN service.

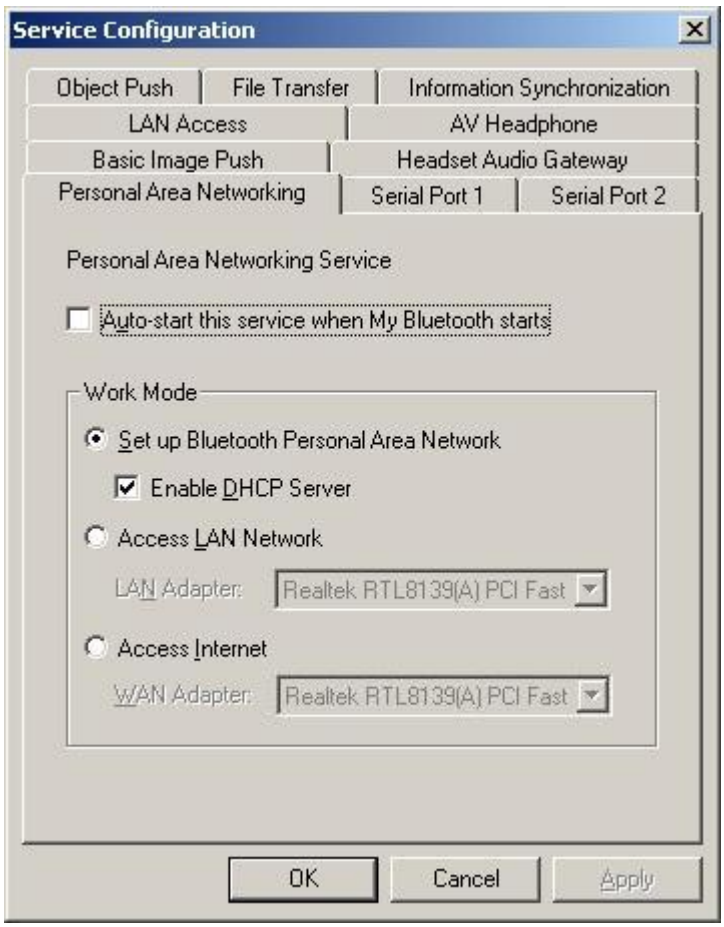


Figure 4.23: Service Configuration

**Setting Items:**

- **Auto start this service when my Bluetooth starts**
  Check this option to automatically start my PAN service the every time BlueSoleil™ is started.

Work Mode

- Set up Bluetooth Personal Area Network
  Choose this item to run in the GN mode. Check **Enable DHCP Server,** and a DHCP server will be started on the server side, so other devices will obtain an IP address (192.168.18.xxx) from the DHCP server after they connected to the GN. (Refer to Figure 4.1)
- Access LAN Network
  Choose this item to run in the NAP mode, and other devices can access outside LAN network after they connected to the NAP. (Refer to Figure 4.3)
- Access Internet
  Choose this item to run in the NAP mode, and other devices can access outside WAN network (e.g. Internet) after they connected to the NAP. (Refer to Figure 4.4)

# 5 Dial-Up Networking

## 5.1 Introduction

The Bluetooth Dial-up Networking (DUN) service allows a Bluetooth-enabled client to access the Internet wirelessly through a modem on another Bluetooth device or a cellular phone. The other Bluetooth device or the cellular phone is called the gateway (server) as it provides access to the public network.

The DUN profile can be used in the following scenario:

- A Bluetooth computer accesses the Internet through a Bluetooth cellular phone or Bluetooth modem.

## 5.2 Connect to a Dial-up Gateway from a Computer

This section outlines the steps involved in a computer (client) accessing the Internet through a Bluetooth cellular phone.

| Computer A: | Bluetooth Cellular Phone: |
|---|---|
| Notebook/ Laptop | Ericsson T39 cellular phone |
| A Bluetooth Device | |
| Windows XP | |
| IVT BlueSoleil™ | |

Step 1: Insert the Bluetooth Device in the computer and start BlueSoleil™ in the computer.

Step 2: Set the Ericsson T39 to be discoverable so that Computer A can find the T39.

1. Press the **Menu** button on the T39 and scroll until you reach the **Extras** menu option, select **Extras** and scroll until you find **Bluetooth**. Select this option and scroll until you see **Discoverable**. Press the **Yes** button to confirm the selection.
2. The T39 will now enable itself to receive connection requests from other devices.

Step 3: Add Computer A to the paired device list in the T39.

1. Press the **Menu** button on the T39 and scroll until you reach the **Extras** menu option, select **Extras** and scroll until you find **Bluetooth**. Select this option and scroll until you see **Discover**. Press the **Yes** button to confirm the selection.
2. The T39 will now start searching devices. Once the T39 finds "ComputerA" on the screen, select it by pressing the **Yes** button. The **Add to paired?** message appears on the screen. Press **Yes** to confirm you want to initialize pairing.
3. The T39 will ask for the Bluetooth passkey. You can input any

number, for example, "1".

4. On the BlueSoleil™ side, the **Enter Bluetooth Passkey** window pops up requesting the Bluetooth passkey. Input the same Bluetooth passkey you have input in the T39 and click **OK**.
5. Once the pairing process is successfully complete, the T39 device icon is displayed in the Main Window of Computer A. At the meanwhile, the following dialog pops up asking you whether **Create a Shortcut on the windows desktop**. If you choose **yes**, a shortcut icon called **DUN** will occur on the desktop, otherwise the icon will not occur.

Create a shortcut on the windows desktop
A Bluetooth cellular phone is paired to my device. If it has Bluetooth DUN service, do you want to create a shortcut on windows desktop for the dial-up?
Phone number:
*99***1#
Yes
No

- This is the icon on the desktop:

Step 5: Connect to phone DUN service:

- Search for Bluetooth devices in Computer A until you find the T39.
- In the Main Window of Computer A, double click the T39 device to find its DUN service. If found, the DUN service icon in the Main Window will turn pink.
- In the Main Window of Computer A, double click the DUN service icon to connect to the DUN service on the T39.
- Once the two computers are connected, the Bluetooth Dial-up Networking (DUN) service icon in the Main Window will turn from pink to green.

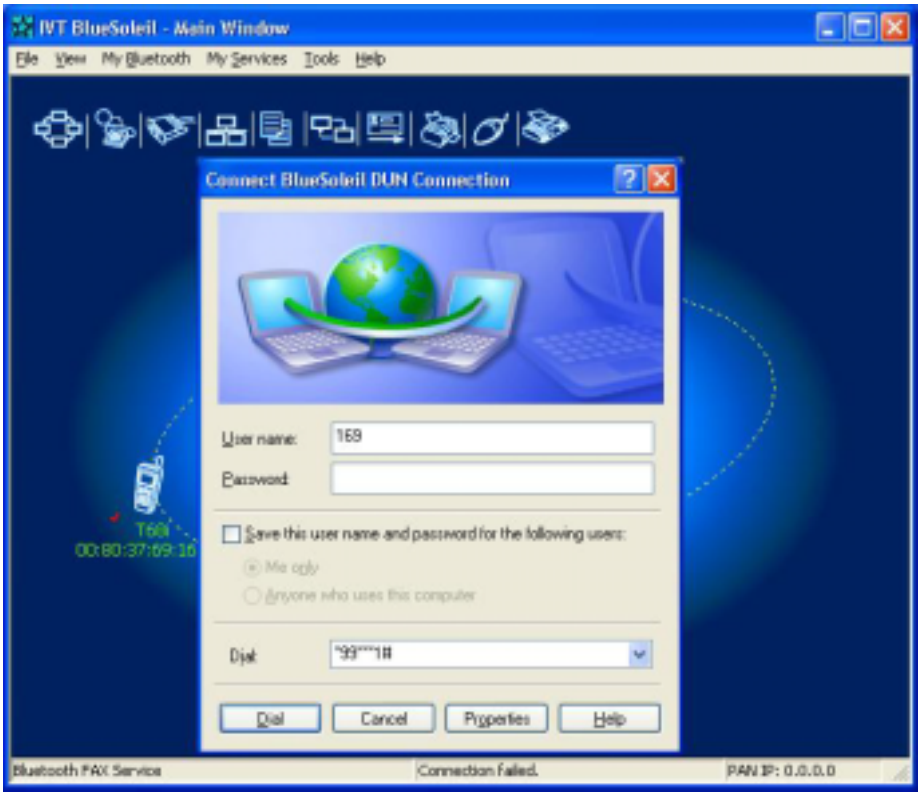


Figure 5.1: Connect BlueSoleil™ DUN Connection

Step 6: Dial to Internet

1. The **Connect BlueSoleil™ DUN Connection** window appears (Figure 5.1).
2. Input a valid username, password and the Internet Service Provider's (ISP's) phone number, then click the **Dial** button.
3. If the dial-up is successful, a small icon appears on the bottom right hand of the Windows taskbar, indicating that the dial up connection is successfully established.
4. If the dial-up fails, the Bluetooth connection between the two computers will be disconnected. In this case, to reconnect to the T39's DUN service, repeat Steps 5 above.

Step 7: Once the dial-up connection is established, users can browse web sites or access other Internet services from Computer A.

Step 8: There are three methods to **disconnect the dial-up connection**:

- Method 1. Double-click the dial-up connection icon on the bottom right of the Windows taskbar. The **BlueSoleil™ DUN Connection Status** window appears. Click the **Disconnect** button to disconnect the dial-up connection (Figure 5.2).
- Method 2. Right-click the **Bluetooth Dial-up Networking** icon in the Main Window**,** and then click the **Disconnect** menu item on the pop-up menu.
- Method 3. Right-click the T39 device in the Main Window and select **Disconnect | Bluetooth Dial-Up Networking**.

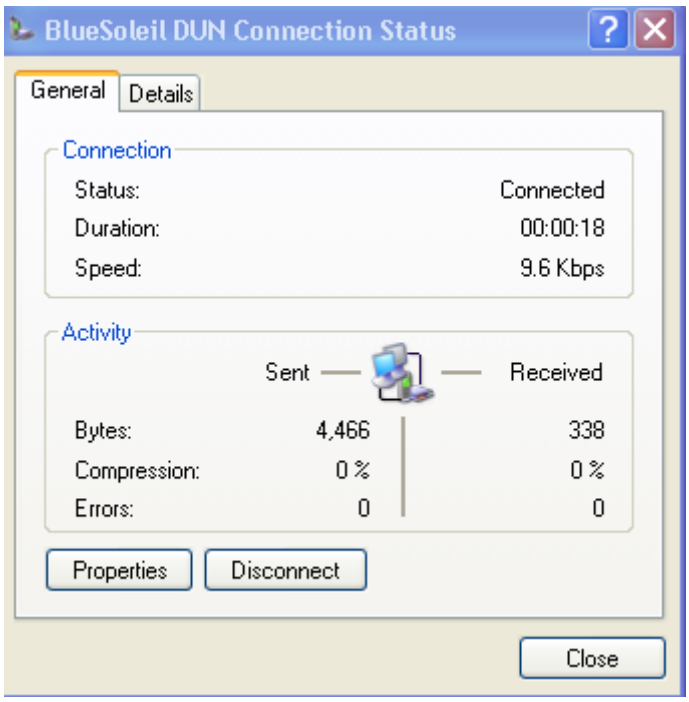


Figure 5.2: BlueSoleil™ DUN Connection Status window

## 5.3 Settings for Dial-up Networking Profile (client side) in Windows98/Me

Before using the Dial-up Networking (DUN) profile in Windows98/Me, ensure a Dial-up Adapter is already installed on the client computer.

### 5.3.1 Check if a Dial-up Adapter is installed

Step 1: Select the **Control Panel** from the **Start |Settings** menu.

Step 2: Double-click the Network icon. (Figure 5.3)

Figure 5.3: Windows Control Panel

Step 3: Check if a Dial-up Adapter appears in the Network Component list. (Figure 5.4)

Step 4: If a Dial-up Adapter is not found, then click **Add** to install one.

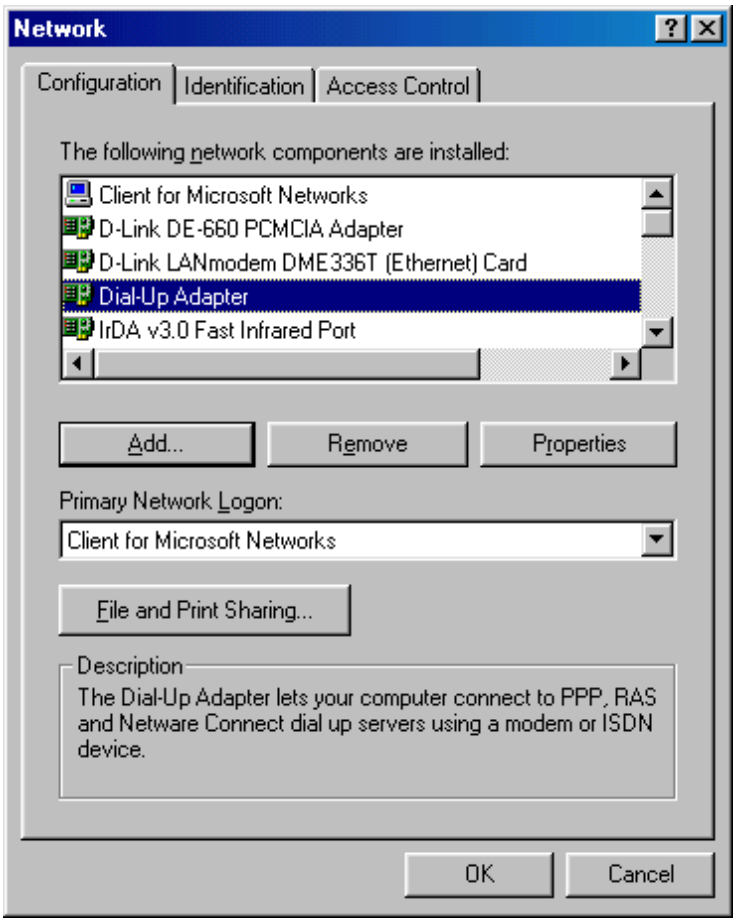


Figure 5.4: Install Dial-up Adapter

Step 5: Select **Adapter** from the Network Component list and click **Add**. (Figure 5.5 and Figure 5.6)

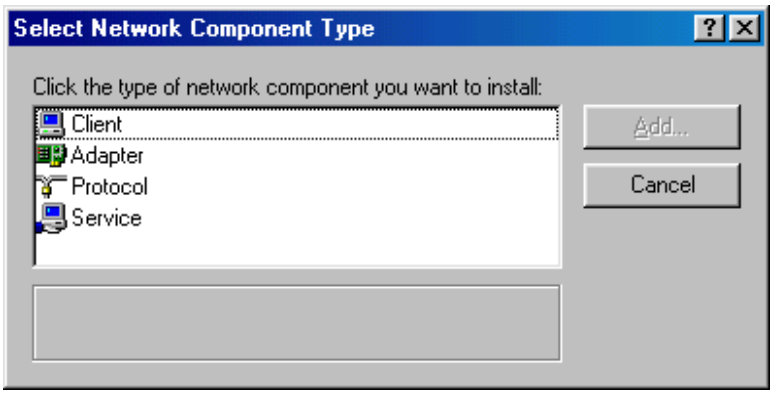


Figure 5.5: Network Component list

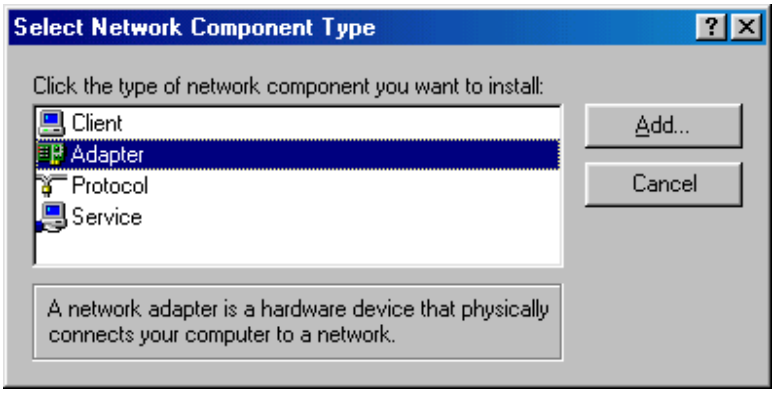


Figure 5.6: Select Adapter as the Network Component Type

Step 6: Select **Microsoft** from the Manufacturers list on the left-hand side and select **Dial-up Adapter** in the Network Adapter list on the right hand side. (Figure 5.7 and Figure 5.8)

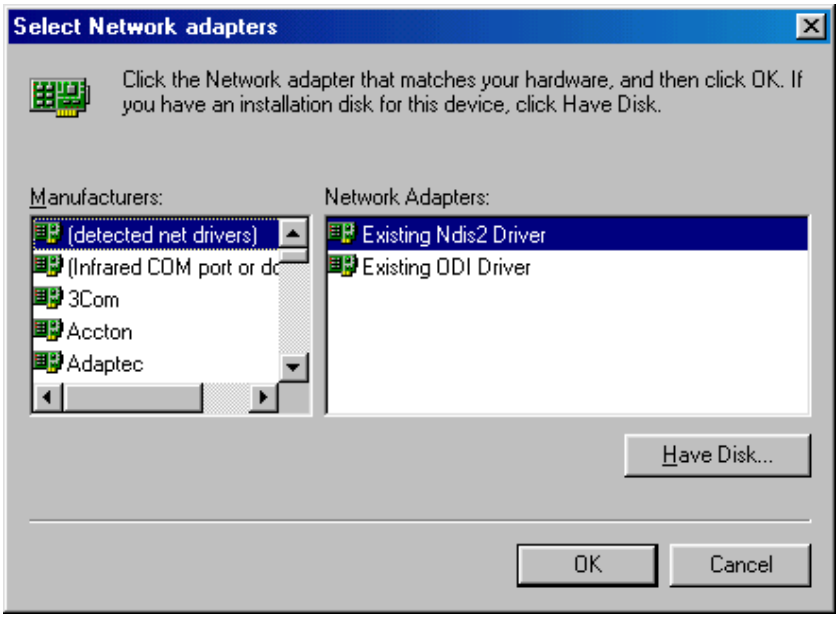


Figure 5.7: Select Network Adapters (1)

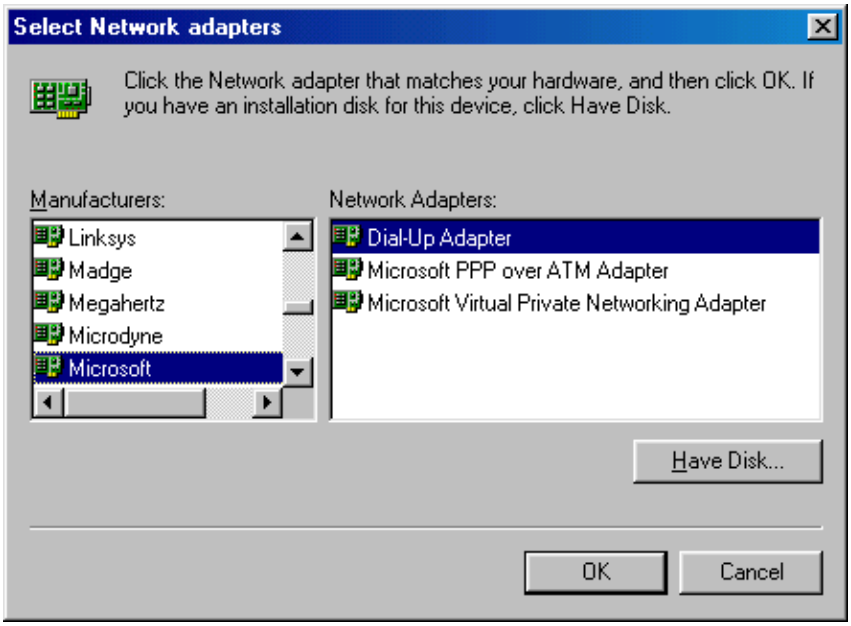


Figure 5.8: Select Network Adapters (2)

Step 7: Click **OK** to return to the Network property sheet. (Figure 5.9)

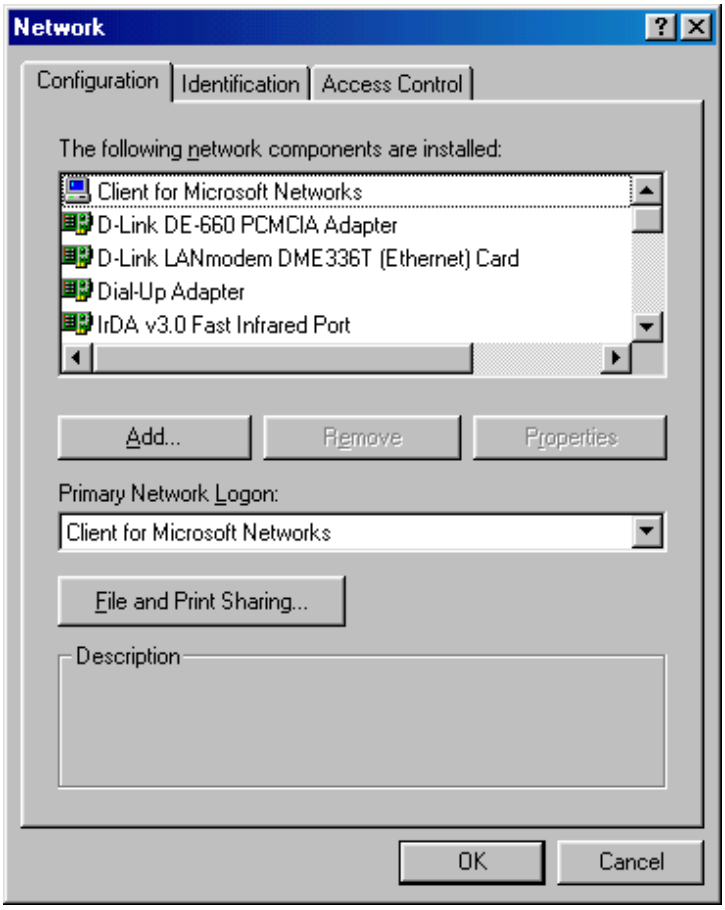


Figure 5.9: Network property sheet

Step 8: Click **OK** to close the **Network** property sheet. A message box pops up, click **Yes** to restart the computer. (Figure 5.10).

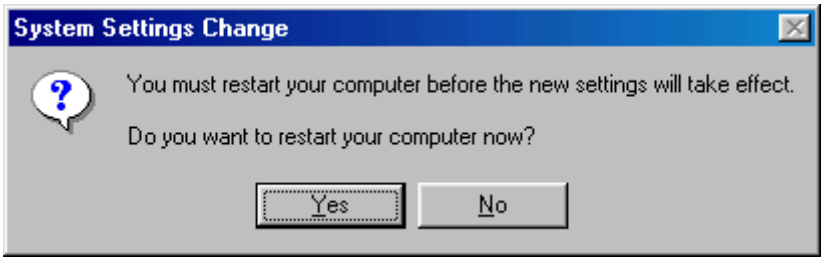
System Settings Change
You must restart your computer before the new settings will take effect.
Do you want to restart your computer now?
Yes
No

Figure 5.10: Restart computer

# 6 Bluetooth Serial Port

## 6.1 Introduction

The Bluetooth Serial Port (SPP) provides a virtual serial port via Bluetooth as an alternative to a hardwired serial cable between a computer and device. Any program that uses a standard serial port can use the Bluetooth serial port without any change.

IVT BlueSoleil™ provides three Serial Port services, you can connect with three remote devices and be connected with three remote devices at the same time through serial ports.

The SPP profile can be used in the following scenarios:

- Connecting two computers through a Bluetooth serial port.
- Using SPP to print a document.
- Using a cellphone to control a computer through a Bluetooth serial port.
- Connecting a computer to any other device that supports SPP through a Bluetooth serial port.

## 6.2 Connect Two Computers

This section outlines the steps involved in connecting two computers, Computer A and Computer B using the Bluetooth Serial Port application.

| Computer A: | Computer B: |
|---|---|
| Notebook/ Laptop | Desktop |
| A Bluetooth Device | A Bluetooth Device |
| Windows 2000 | Windows 2000 |
| IVT BlueSoleil™ | IVT BlueSoleil™ |

Step 1: Insert the Bluetooth Devices into each computer.

Step 2: Start BlueSoleil™ in each computer.

Step 3:
- Start the SPP service on Computer A.

Step 4: Connect Computer B to Computer A.

1. On Computer B double click the 'My Device icon' until you find the device, Computer A.
2. Double-click the Computer A device to find its SPP service (Figure 6.1). The Bluetooth Serial Port service icon turns pink.
3. Right-click the Bluetooth Serial Port service icon and select **Connect**.

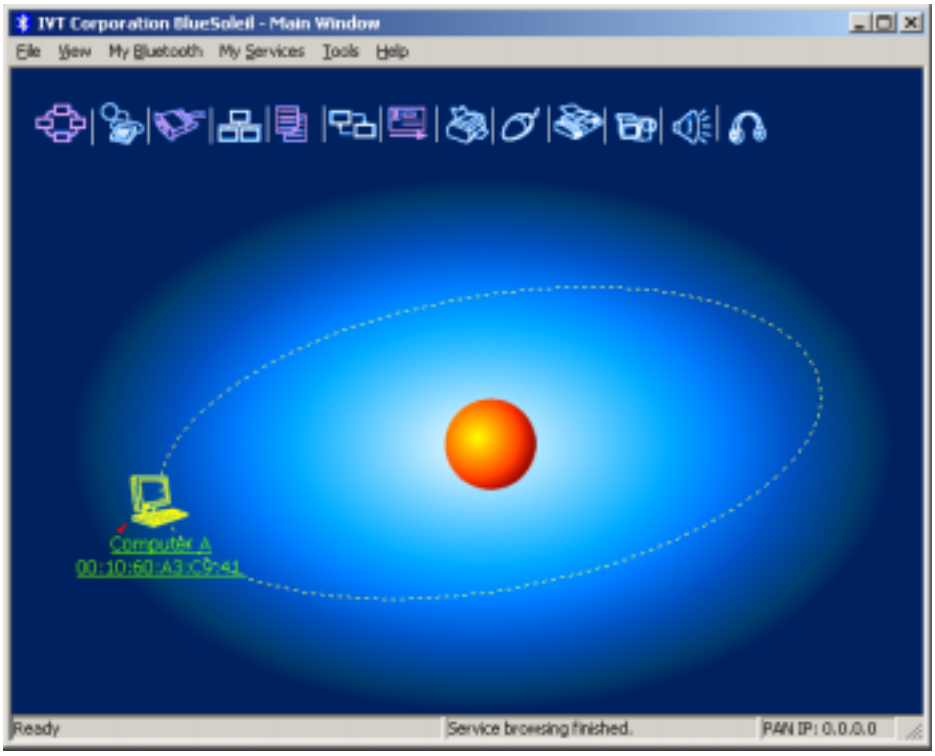


Figure 6.1: Double-click the Computer A device icon

- The connection is established successfully as shown in Figure 6.2. And the serial port number is shown on the right bottom status bar on Computer B. (Figure 6.3)

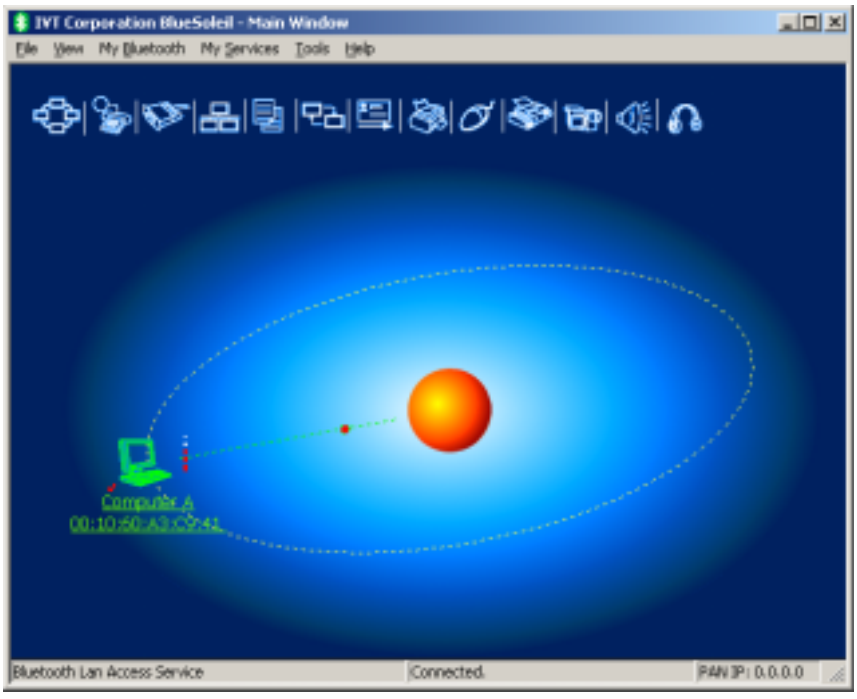
IVT Corporation BlueSoleil - Main Window
File View My Bluetooth My Services Tools Help
Computer A
Bluetooth Lan Access Service
Connected.
PAN IP: 0.0.0.0

Figure 6.2: The connection is established successfully

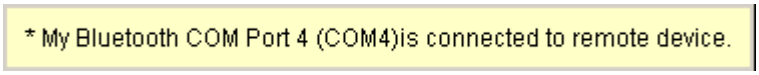


Figure 6.3: The serial port number is shown

Note: You can initiate three connections between the two computers through three serial ports. And at the same time, you can also be connected with three remote devices if you provide three SPP services.

## 6.3 Use SPP to Print a Document

This section outlines the steps involved in connecting a computer to a Bluetooth Printer Adapter using SPP.

| | |
|---|---|
| Computer A:<br>Notebook/Laptop<br>A Bluetooth Device<br>Windows 2000<br>IVT BlueSoleil™ | Bluetooth Printer Adapter B:<br>Printer<br>Bluetooth Printer Adapter |

Step 1: Insert the Bluetooth Device into the computer.

Step 2: Start BlueSoleil™ in the computer.

Step 3: Connect Computer A to the Bluetooth Printer Adapter B using SPP.

1. Go to Computer A; double click the My Device icon' until you find the device Bluetooth Printer Adapter B.
2. Double-click the Bluetooth Printer Adapter B device to find it's SPP service.
3. Double-click the SPP service icon to start connecting SPP.

Step 4: Change the printer settings to use the connected Bluetooth serial port.

Step 5:
- Print a document.

## 6.4 Use a cellphone to control a computer

This section outlines the steps involved in connecting a computer to a Bluetooth Cellphone using SPP.

| | |
|---|---|
| Computer A:<br>Notebook/Laptop<br>A Bluetooth Device<br>Windows 2000<br>IVT BlueSoleil™ | Bluetooth Cellphone B:<br>Ericsson T39 or T68 |

Step 1: Insert the Bluetooth Device into the computer.

Step 2: Start BlueSoleil™ in the computer.

Step 3: Connect Computer A to the Bluetooth Cellphone B using SPP.

1. Go to Computer A; double click the My Device icon' until you find the device Bluetooth Cellphone B.
2. Double-click the Bluetooth Cellphone B device to pair with it. If pairing is finished successfully, then find it's SPP service.
3. Double-click the SPP service icon to start connecting SPP.
4. The connected serial port number is shown on the right bottom status bar on Computer A. (Figure 6.4)

Figure 6.4: The serial port number is shown

Step 4: Select **Start|Program|IVT Corporation|Control PC** to open Mobile HID program. (Figure 6.5)

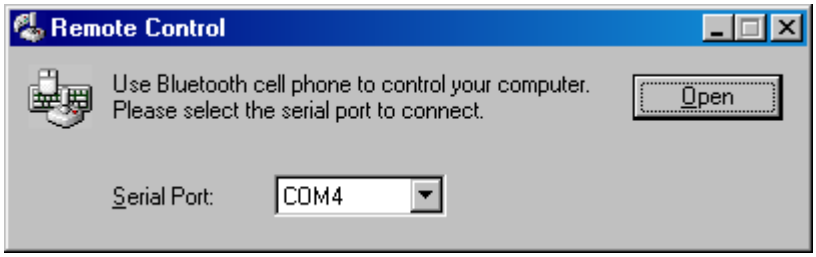


Figure 6.5: Mobile HID Program Dialog

Step 7: From the Serial Port list in the "Remote Control" window, select the serial port number that has been established connection. Then click Open button to enable Cellphone B controlling computer A. The Open button becomes to Close button automatically. (Figure 6.6)

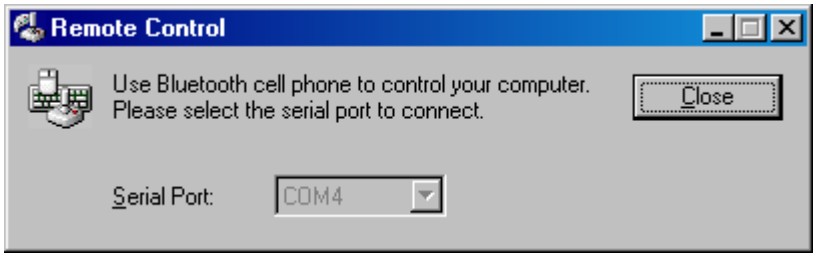


Figure 6.6: Click button to start controlling computer

Step 8: A new menu will be added into the accessories menu in Cellphone B. Enter menus by the path: accessories -> Mobile HID -> Control PC -> Controlling. When Controlling window is shown, you can control Computer A by all keys in Cellphone B.

Step 9: If you want to disable Cellphone B controlling computer A,click Close button. The Close button becomes to Open button automatically. Or press down the No key in Cellphone B to exit Controlling window.

The function of cellphone key map:

| Keys in cellphone | Function definition |
|---|---|
| Up,Down,Left,Right direction key | mouse move (no UP,Down in T39) |
| Key Yes | Mouse left button |
| Press down direction key (T68) | Mouse right button |
| Key c (T39) | Mouse right button |
| Volume Up | Page Up |
| Volume Down | Page Down |
| Key 1 | Home |
| Key 2 | Arrow Up |
| Key 3 | End |
| Key 4 | Arrow Left |
| Key 5 | Arrow Down |
| Key 6 | Arrow Right |
| Key 7 | Start menu |
| Key 8 | Key Enter |
| Key 9 | Key F5 |
| Key 0 | Show desktop |
| Key * | Key Ctrl |
| Key # | Key Alt |

## 6.5 SPP Configuration

### 6.5.1 My SPP Service

In the BlueSoleil™ Service Window, right-click the **Serial Port 1** or **Serial Port 2** icon. On the pop-up menu, select **Properties** to configure the Serial Port1 and Serial Port 2.

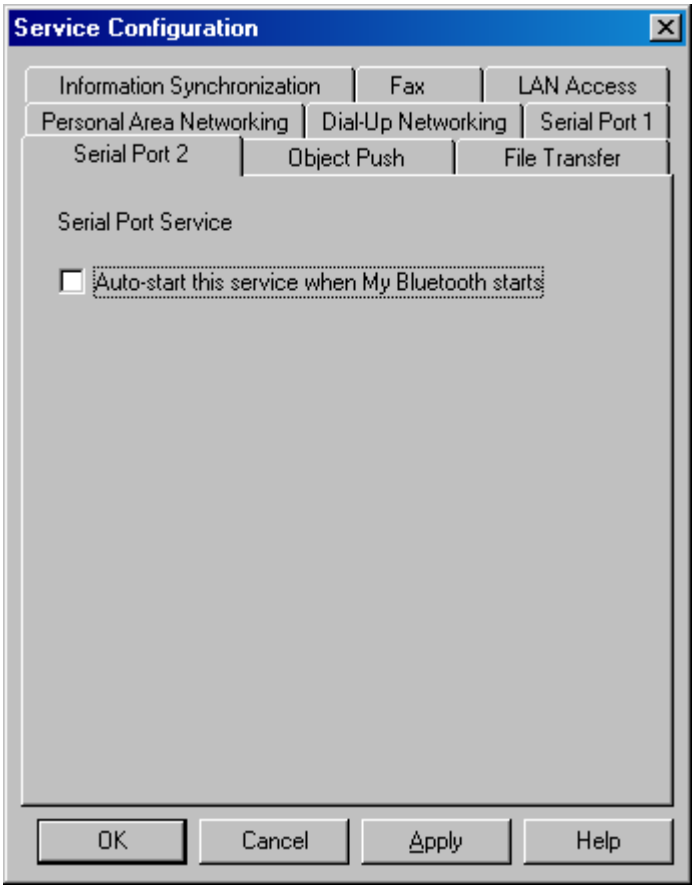


Figure 6.9: SPP Service Configuration.

**Setting Items:**

- **Auto start this service when my Bluetooth starts**
  Check this option to automatically start my Bluetooth SPP service #(1,2) every time BlueSoleil™ is started. (Figure 6.9)

# 7 Bluetooth File Transfer

## 7.1 Introduction

The File Transfer profile (FTP) supports the file transfer usage model, which offers the ability to transfer files from one Bluetooth device to the other.

The FTP profile can be used in the following scenarios:

- A computer can transfer files to/from another computer.

## 7.2 Transfer files to/from a Computer

This section outlines the steps in transferring files between Computer A and Computer B.

| | |
|---|---|
| Computer A (Server) | Computer B (Client) |
| IVT BlueSoleil™ | IVT BlueSoleil™ |
| A Bluetooth Device | A Bluetooth Device |

**Note:** BlueSoleil™ can inter-operate with other Bluetooth devices which support FTP profile.

**Step 1:** Insert the Bluetooth Devices into each computer.

**Step 2:** Start BlueSoleil™ in each computer.

**Step 3:** Make sure File Transfer service is started on Computer A. Refer to Section 7.3 for service configurations.

**Step 4:** Search for Computer A on Computer B, and connect to its FTP service (Figure 7.1). The remote folder is displayed in a Windows Explorer style window (Figure 7.2).

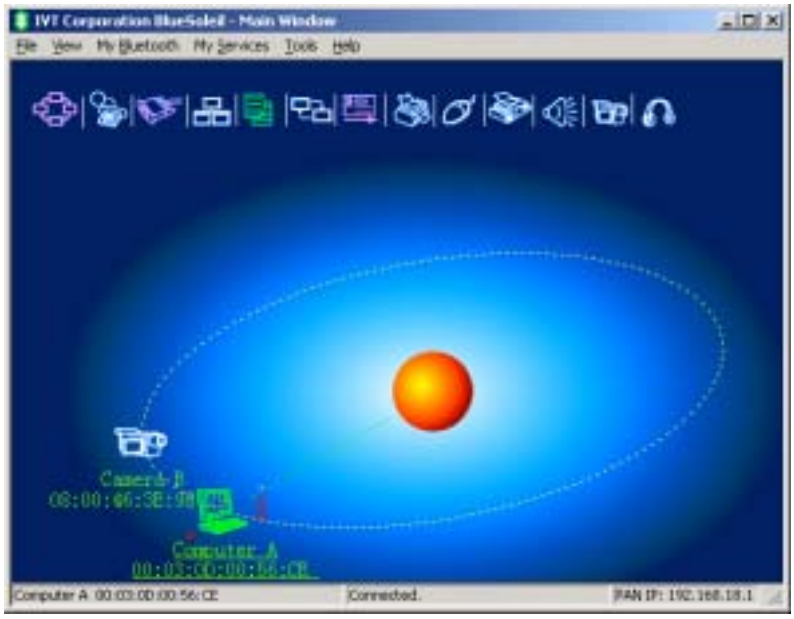


Figure 7.1: The connection is successfully established

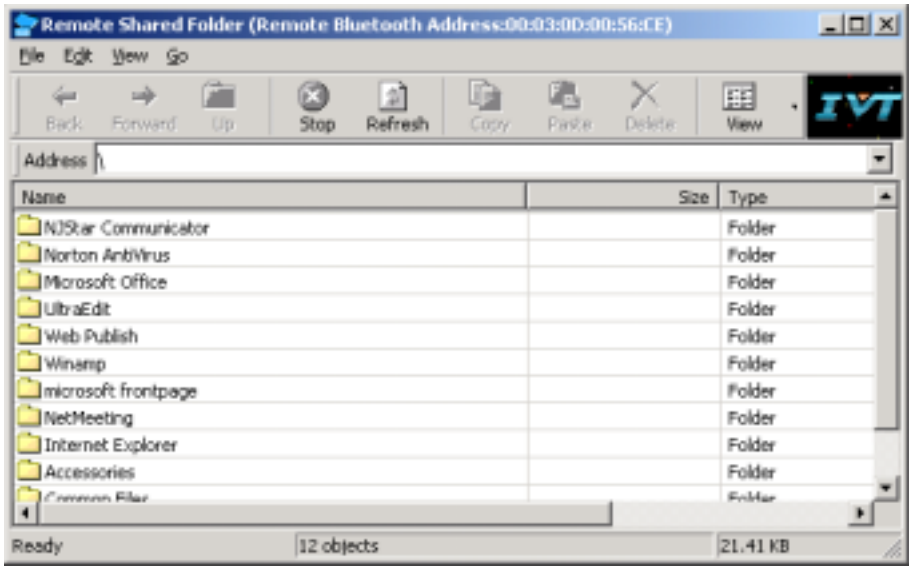


Figure 7.2: The remote folder is displayed

**Step 5:** Copy files and directories.

- From Computer B to Computer A – upload
  Select files\ directories on Computer B and drag files into the Remote Shared Folder. (Figure 7.3)
- From Computer A to Computer B – download
  Select files\ directories from the Remote Shared Folder and drag files into the desktop or a folder on Computer B. (Figure 7.4)

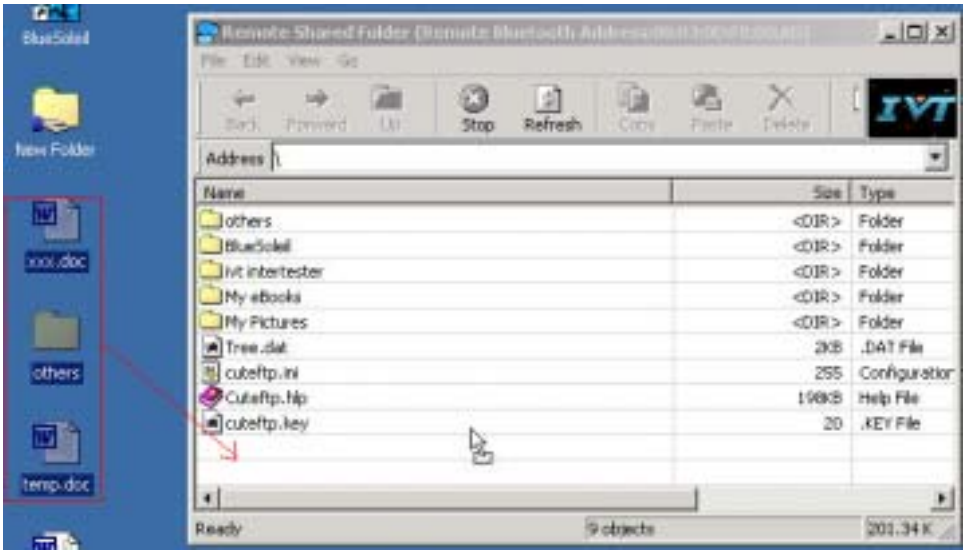


Figure 7.3: Upload files to Computer A

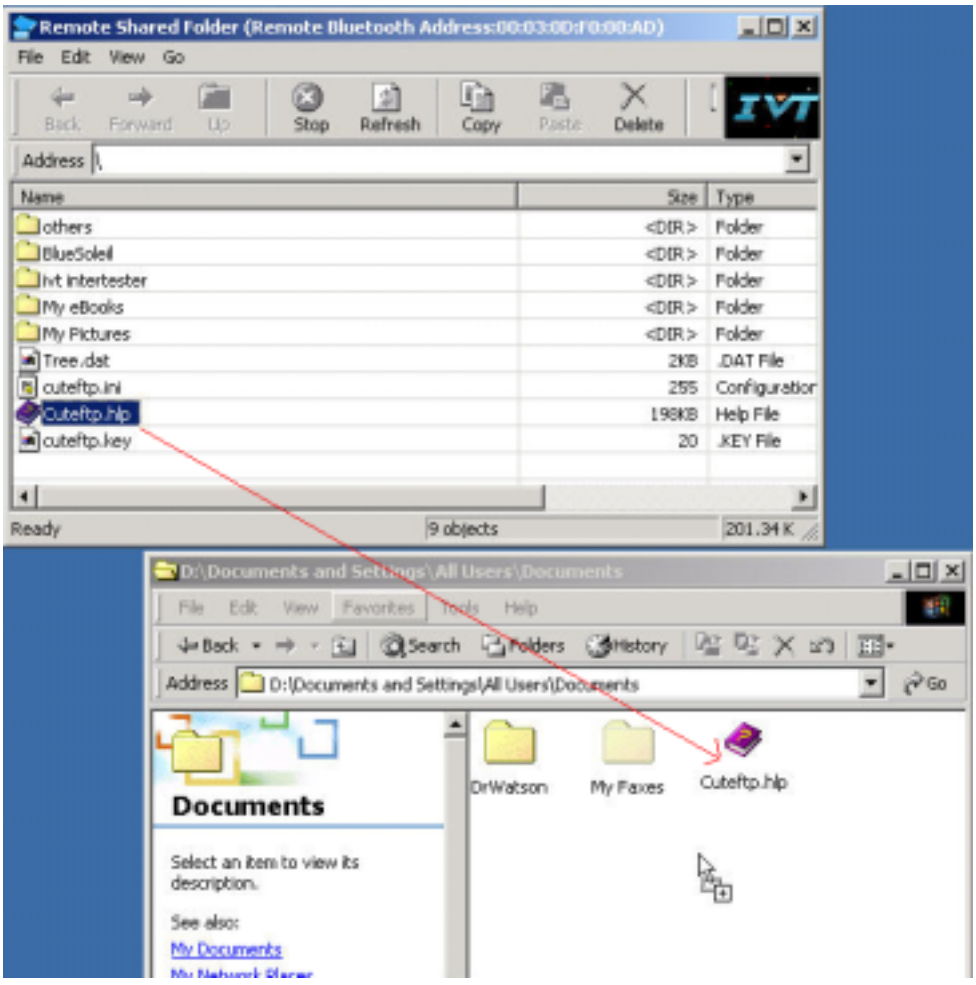


Figure 7.4: Download files from Computer A

## 7.3 FTP Configuration

In the BlueSoleil™ Service Window, right-click the File Transfer icon. On the pop-up menu, select **Properties** to configure the 'my FTP service' (Figure 7.5).

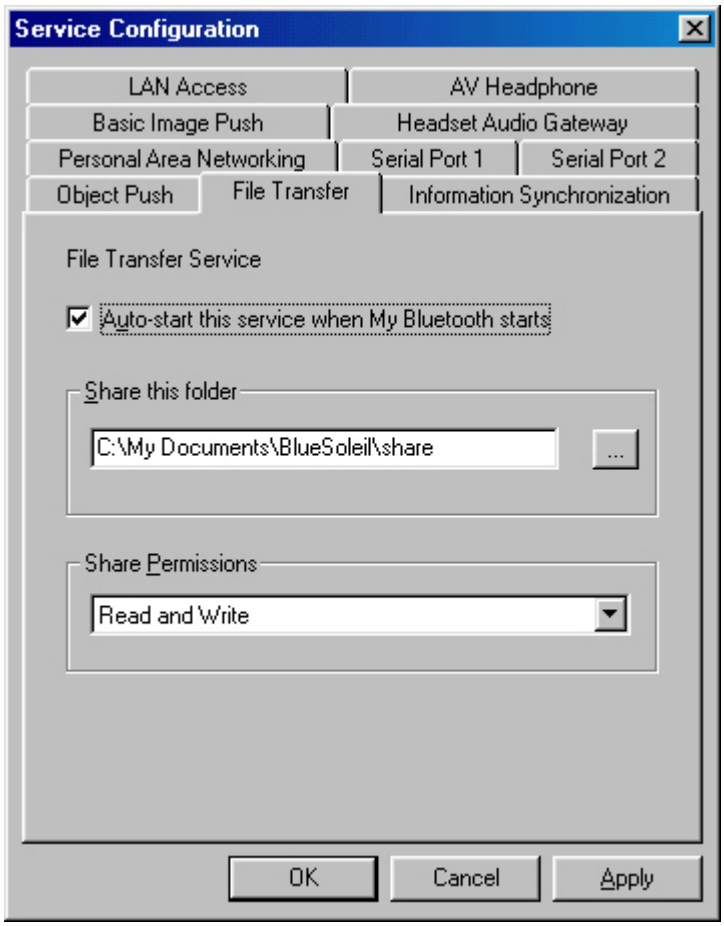


Figure 7.5: Configure FTP service

**Setting Items:**

- **Auto starts this service when my Bluetooth starts**
  Check this box to automatically start the File Transfer service every time BlueSoleil™ is started.
- **Root Directory**
  This sets the root directory that you want to share with other computers using Bluetooth.
- **Access Permissions**
  This sets the access permission remote computers have to the shared root directory.

# 8 LAN Access

## 8.1 Introduction

The Bluetooth LAN Access Profile (LAP) allows Bluetooth-enabled devices to access the services of a LAN using Point-to-Point Protocol. In this usage model, multiple data terminals use a LAN access point as a wireless connection to a Local Area Network (LAN). Once connected, data terminals operate as if they are connected to the LAN via dial-up networking and can access all the services provided by the LAN.

The LAN application can be used in the following scenarios:

- A computer (or PDA) accesses a Local Area Network via a LAP Server.
- A computer (or PDA) accesses a Local Area Network via a LAN access point.

**Note:** Before using the LAN Access Profile in Windows98/Me, ensure that a Dial-up Adapter and Windows's component direct cable are already installed on the computer. (See "Section 8.4: Settings for LAN Access Profile (client side) in Windows98/Me"). Moreover, every operating system should have an installation of NetBEUI protocol; otherwise, it cannot use computer name to visit other computer.

## 8.2 Access a Local Area Network (LAN)

This section outlines the steps involved in connecting to a Local Area Network using the LAP application.

| Computer A: | Computer B: |
|---|---|
| Notebook/ Laptop | Desktop |
| A Bluetooth Device | A Bluetooth Device |
| Windows 2000 | Windows 2000 |
| IVT BlueSoleil™ | IVT BlueSoleil™ |

Step 1: Insert Bluetooth Devices into both computers.

Step 2: Start BlueSoleil™ in both computers.

Step 3:
- Start the LAP service on Computer A.

Step 4: Make incoming connection on Computer A
- Right-click on **My Network Places**; select **Properties.** (Figure 8.1)
- On the **Network and Dial-up Connections** panel, right-click the **Incoming Connection** icon, and then select **Properties** on the pop up menu. (Figure 8.2)

Figure 8.1: Right-click My Network Places

Figure 8.2: Select Properties on the pop up menu

- Click **Networking** on the **Incoming Connections Properties** pop-up window. (Figure 8.3)
- Choose **Internet Protocol (TCP/IP)** and click **Properties**. (Figure 8.4)

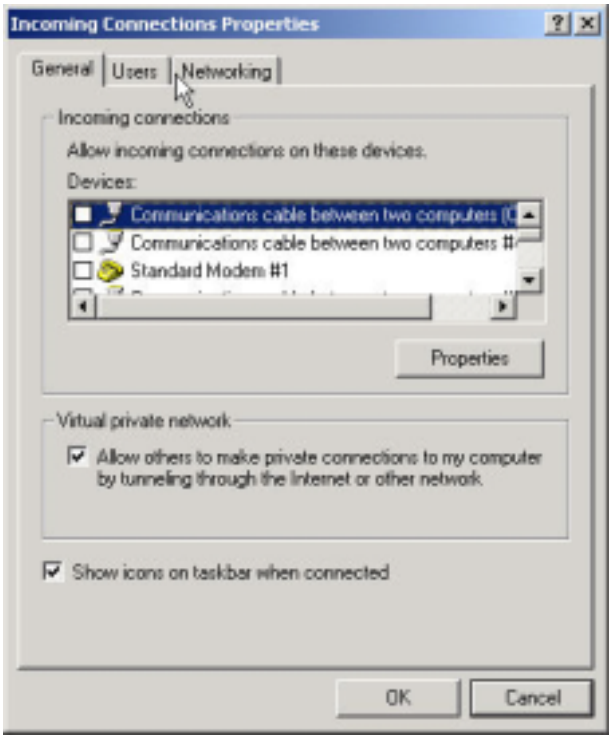


Figure 8.3: Incoming Connections Properties

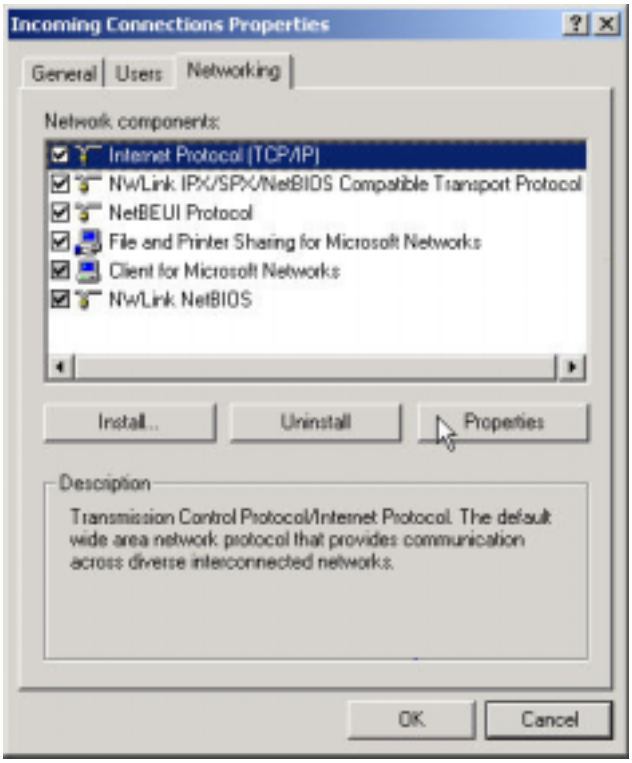


Figure 8.4: Choose Internet Protocol (TCP/IP)

- Select **Specify TCP / IP addresses**, and input the two IP addresses. The subnet mask of the two IP addresses should be the same as the subnet of the LAN Computer A belongs to. (Figure 8.5)

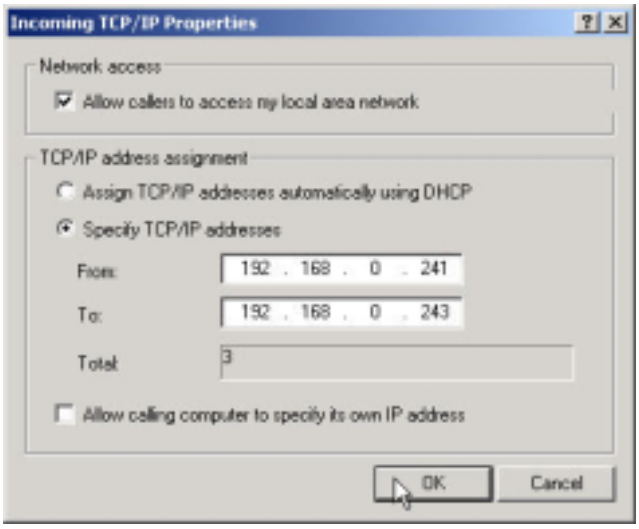


Figure 8.5: Input the IP addresses

Step 5: **Connect to Computer A**.

1. Search for Computer A on Computer B.
2. Find the LAP service of Computer A.
3. Right-click the LAP service icon; select **Connect** on the pop-up menu. (Figure 8.6)

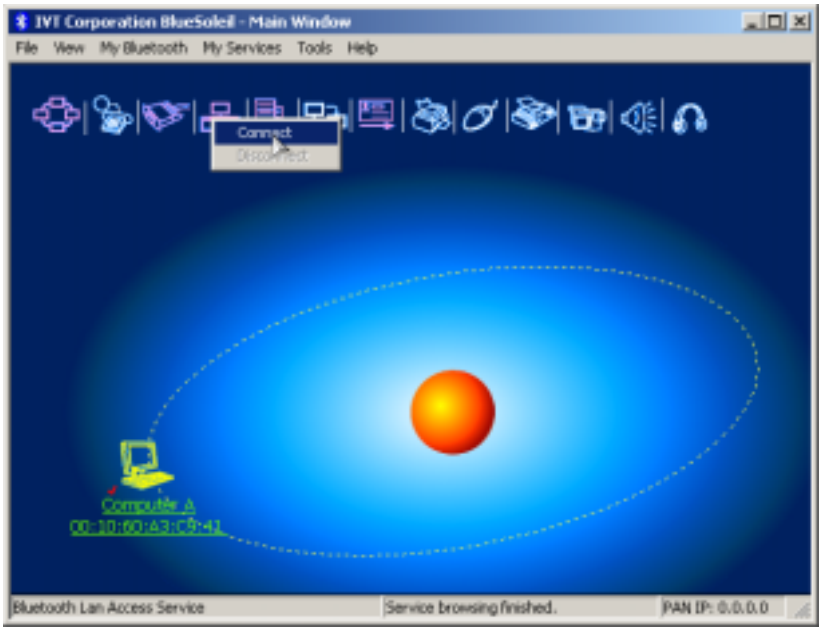


Figure 8.6: Select Connect

- The **Connect BlueSoleil™ LAP Connection** window pops up. Input a username and password. (Figure 8.7)
- The connection is then established.

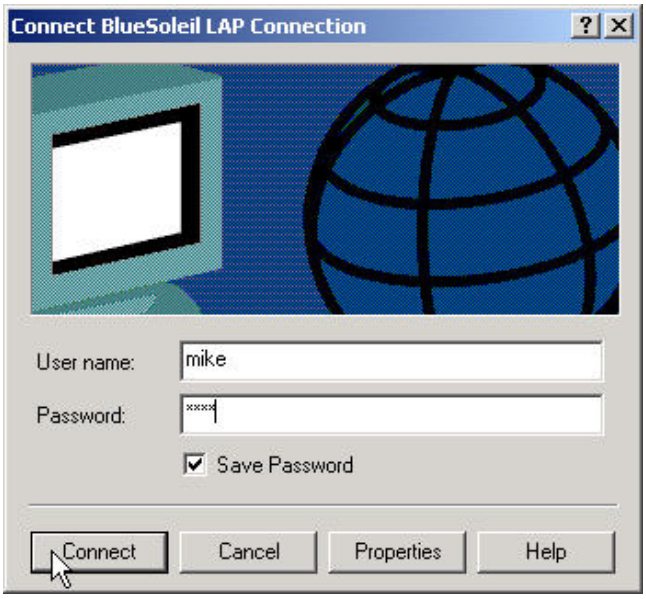


Figure 8.7: Input Username and Password

Step 6: Computer B can now access the LAN via Computer A.

## 8.3 Access a LAN via a LAN Access Point

This section outlines the steps involved in accessing a LAN through a LAN access point.

| | |
|---|---|
| LAN Access Point A: | Computer B |
| Bluetooth access point | Notebook/Laptop |
| | A Bluetooth Device |
| | Windows 2000 |
| | IVT BlueSoleil™ |

Step 1: **Connect LAN access point to the Local Area Network.**

- Set the LAN access point's name to anything you want. Here it is named LAN Access Point A.
- Set LAN Access Point A's IP address to be in the same range as the other computers in the LAN.

Step 2: Insert the Bluetooth Device into the computer.

Step 3: Start BlueSoleil™ in the computer.

Step 4: Connect to the LAN Access Point A.

1. Find the LAP service of LAN Access Point A

2. Double-click on the LAN Access Point A device icon on

Computer B.

3. Right-click the LAP service icon; select **Connect** on the pop-up menu.

- The **Connect BlueSoleil™ LAP Connection** window pops up. Input username and password. (Figure 8.8)
- The connection is now established. (Figure 8.9)

Figure 8.8: Input username and password

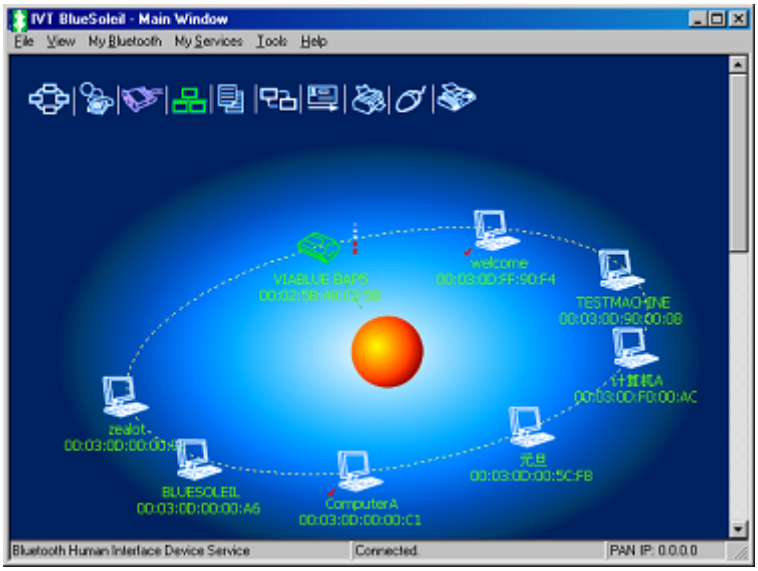
IVT BlueSoleil - Main Window
File View My Bluetooth My Services Tools Help
Bluetooth Human Interface Device Service
Connected.
PAN IP: 0.0.0.0

Figure 8.9: Successful connection to the LAN Access Point

Step 5: Access other computers in the LAN.

- Now Computer B can access the LAN via LAN Access Point A.

## 8.4 Settings for LAN Access Profile (client side) in Windows98/Me

Before using the LAN Access Profile in Windows98/Me, ensure that a Dial-up Adapter and Windows's component direct cable connection are installed on the client computer.

See “Section 5.3.1: Check if a Dial-up Adapter is installed”, to check if a Dial up Adapter is installed in your computer.

### 8.4.1 Check if a Windows Component Direct Cable Connection is installed

Step 1: Select Control Panel from the Start | Settings menu,

Step 2: Double-click the **Add/Remove Programs** icon. (Figure 8.10)

Figure 8.10: Double-click the Add/Remove Programs icon

Step 3: Select the **Windows Setup** tab in the **Add/Remove Programs Properties** window. (Figure 8.11)

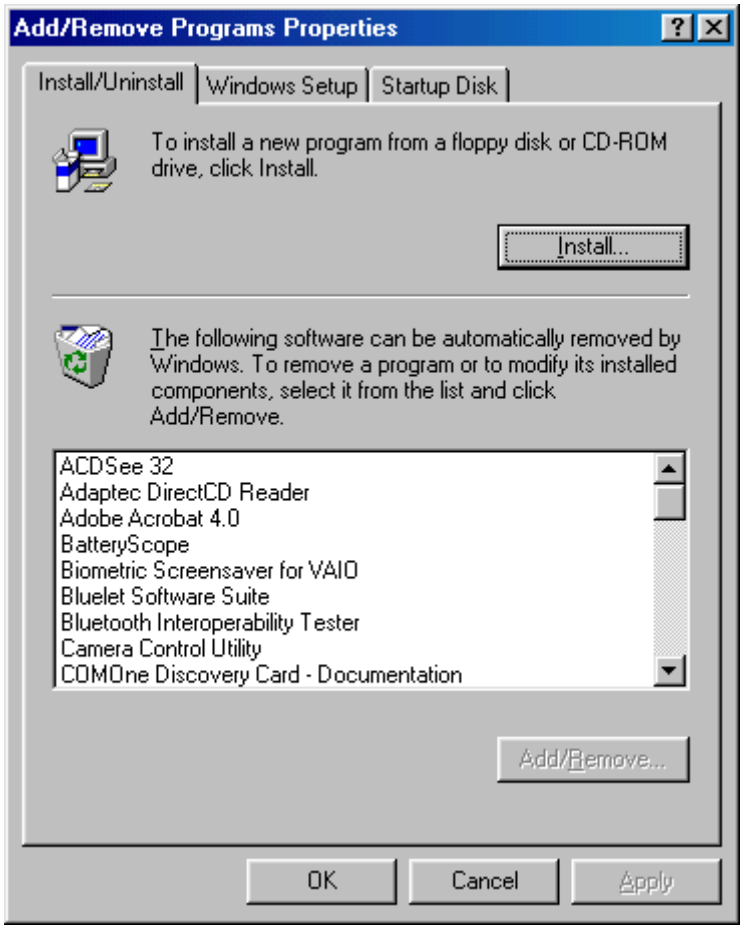
Add/Remove Programs Properties
Install/Uninstall
Windows Setup
Startup Disk
To install a new program from a floppy disk or CD-ROM drive, click Install.
Install...
The following software can be automatically removed by Windows. To remove a program or to modify its installed components, select it from the list and click Add/Remove.
ACDSee 32
Adaptec DirectCD Reader
Adobe Acrobat 4.0
BatteryScope
Biometric Screensaver for VAIO
Bluelet Software Suite
Bluetooth Interoperability Tester
Camera Control Utility
COMOne Discovery Card - Documentation
Add/Remove...
OK
Cancel
Apply

Figure 8.11: Select Windows Setup tab

Step 4: Double-click the **Communications** item in the **Windows Setup** component list to check the properties. (Figure 8.12)

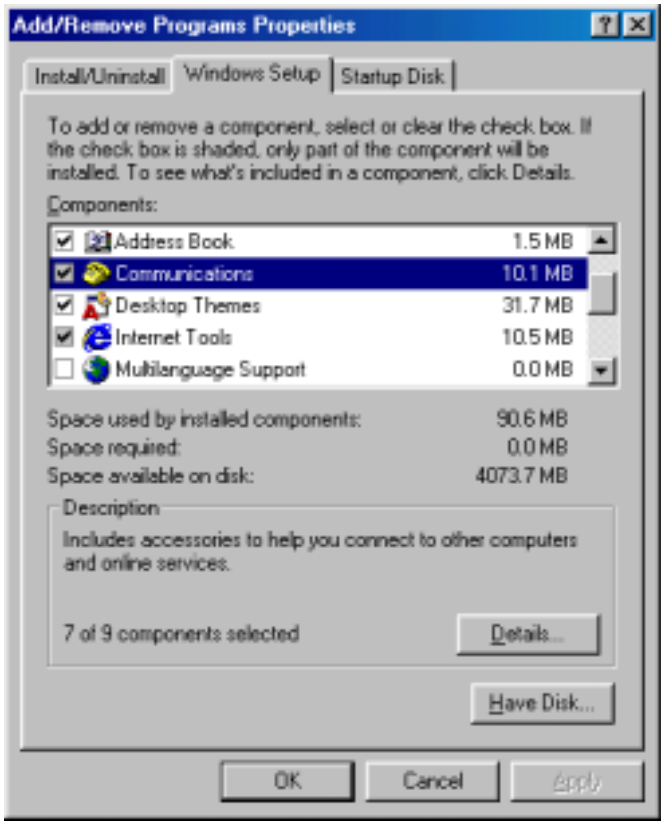
Add/Remove Programs Properties
Install/Uninstall
Windows Setup
Startup Disk
To add or remove a component, select or clear the check box. If the check box is shaded, only part of the component will be installed. To see what's included in a component, click Details.
Components:
Address Book 1.5 MB
Communications 10.1 MB
Desktop Themes 31.7 MB
Internet Tools 10.5 MB
Multilanguage Support 0.0 MB
Space used by installed components: 90.6 MB
Space required: 0.0 MB
Space available on disk: 4073.7 MB
Description
Includes accessories to help you connect to other computers and online services.
7 of 9 components selected
Details...
Have Disk...
OK
Cancel
Apply

Figure 8.12: Double-click Communications item

Step 5: Check if **Direct Cable Connection** is selected. If not, select it and click **OK** to install a **Direct Cable Connection**. (Figure 8.13)

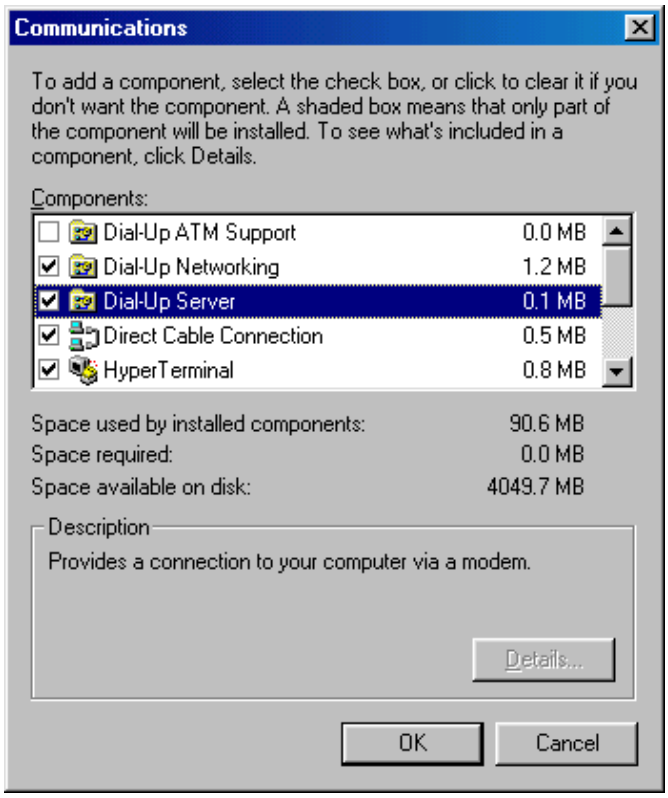
Communications
To add a component, select the check box, or click to clear it if you don't want the component. A shaded box means that only part of the component will be installed. To see what's included in a component, click Details.
Components:
Dial-Up ATM Support 0.0 MB
Dial-Up Networking 1.2 MB
Dial-Up Server 0.1 MB
Direct Cable Connection 0.5 MB
HyperTerminal 0.8 MB
Space used by installed components: 90.6 MB
Space required: 0.0 MB
Space available on disk: 4049.7 MB
Description
Provides a connection to your computer via a modem.
Details...
OK
Cancel

Figure 8.13: Check if Direct Cable Connection is selected

## 8.5 Usage of LAN Access Profile (server side) in Windows98/Me

### 8.5.1 Configure a LAP server in Windows 98/ Me

Step 1: Start the LAP service.

- See "Section 8.2: Access a Local Area Network (LAN)", Steps 1 to 5.
- If this is the first time the service is started n Windows 98/Me, the **Direct Cable Connection** window pops up.

Step 2: Select **Host** and click the **Next** button. (Figure 8.14)

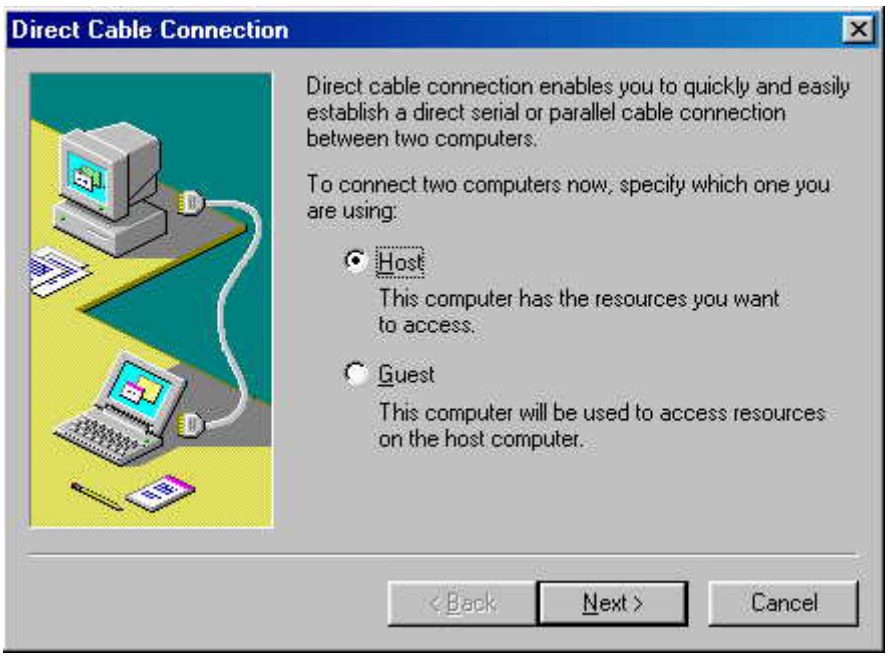
Direct Cable Connection
Direct cable connection enables you to quickly and easily establish a direct serial or parallel cable connection between two computers.
To connect two computers now, specify which one you are using:
Host
This computer has the resources you want to access.
Guest
This computer will be used to access resources on the host computer.
< Back
Next >
Cancel

Figure 8.14: Direct Cable Connection window

Step 3: Select **Bluelet NULL Modem (Server)** and click **Next.** (Figure 8.15)

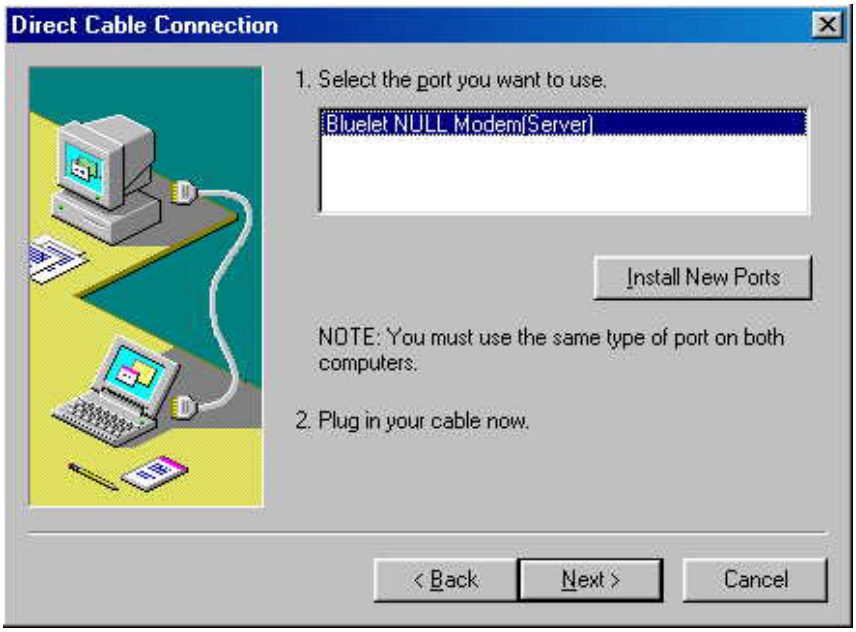
Direct Cable Connection
1. Select the port you want to use.
Bluelet NULL Modem(Server)
Install New Ports
NOTE: You must use the same type of port on both computers.
2. Plug in your cable now.
< Back
Next >
Cancel

Figure 8.15: Select Bluelet NULL Modem (Server)

Step 4: Click the **Finish** button. (Figure 8.16)

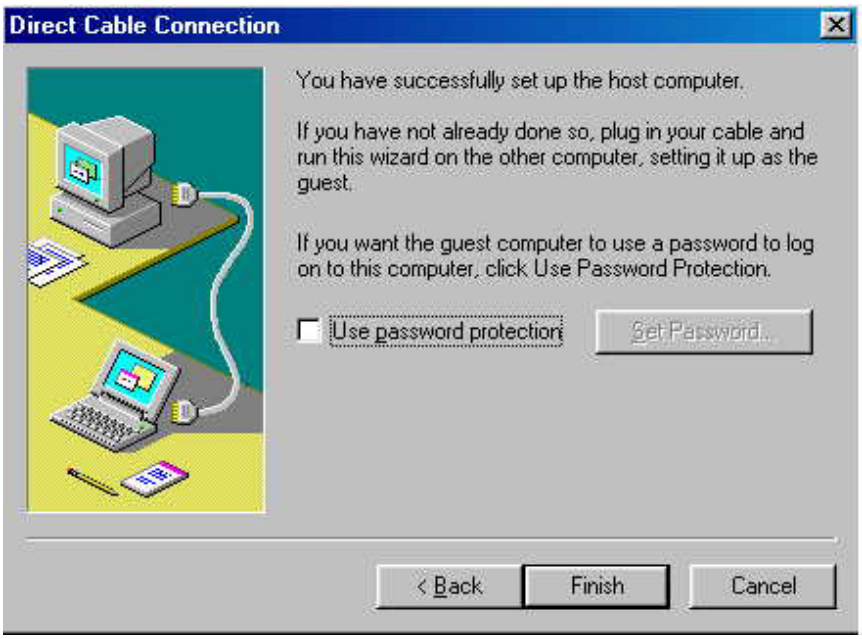
Direct Cable Connection
You have successfully set up the host computer.
If you have not already done so, plug in your cable and run this wizard on the other computer, setting it up as the guest.
If you want the guest computer to use a password to log on to this computer, click Use Password Protection.
Use password protection
Set Password...
< Back
Finish
Cancel

Figure 8.16: Click Finish button.

Step 5: Finally, the **Direct Cable Connection** window pops up. It is now possible to connect to the LAP server. No password is required.

Figure 8.17: Connection created

**Note:** The above steps are applicable when configuring the LAP server for the first time only. The next time the LAP service is started, the Direct Cable Connection window (Figure 8.17) appears.

### 8.5.2 Set-up a LAP connection from Windows 2000 to Windows 98/Me

Step 1: In the **Connect BlueSoleil LAP Connection** window click **Properties** and a window as shown in Figure 8.18 pops up.

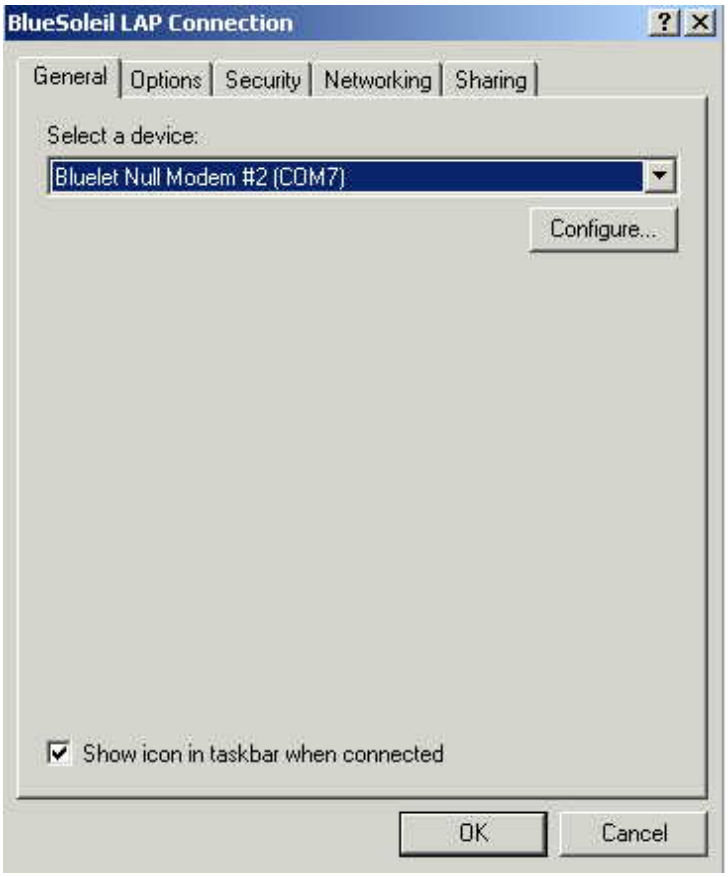


Figure 8.18: Connect BlueSoleil LAP Connection window

Step 2: Select the **Security** tab in **BlueSoleil LAP Connection** window. Select **Advanced (custom settings)** and click **Settings.** (Figure 8.19)

Figure 8.19: Select Advanced (custom settings)

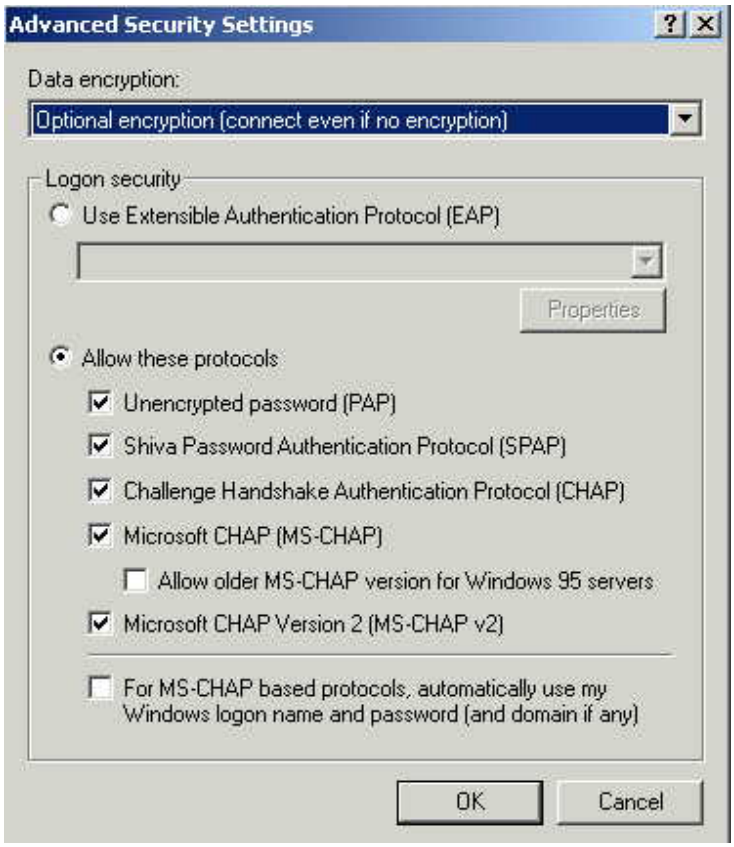
Advanced Security Settings
Data encryption:
Optional encryption (connect even if no encryption)
Logon security
Use Extensible Authentication Protocol (EAP)
Properties
Allow these protocols
Unencrypted password (PAP)
Shiva Password Authentication Protocol (SPAP)
Challenge Handshake Authentication Protocol (CHAP)
Microsoft CHAP (MS-CHAP)
Allow older MS-CHAP version for Windows 95 servers
Microsoft CHAP Version 2 (MS-CHAP v2)
For MS-CHAP based protocols, automatically use my Windows logon name and password (and domain if any)
OK
Cancel

Figure 8.20: Advanced Security Settings window

Step 3: Select **Allow older MS-CHAP version for Windows 95 servers** and click **OK.** (Figure 8.21)

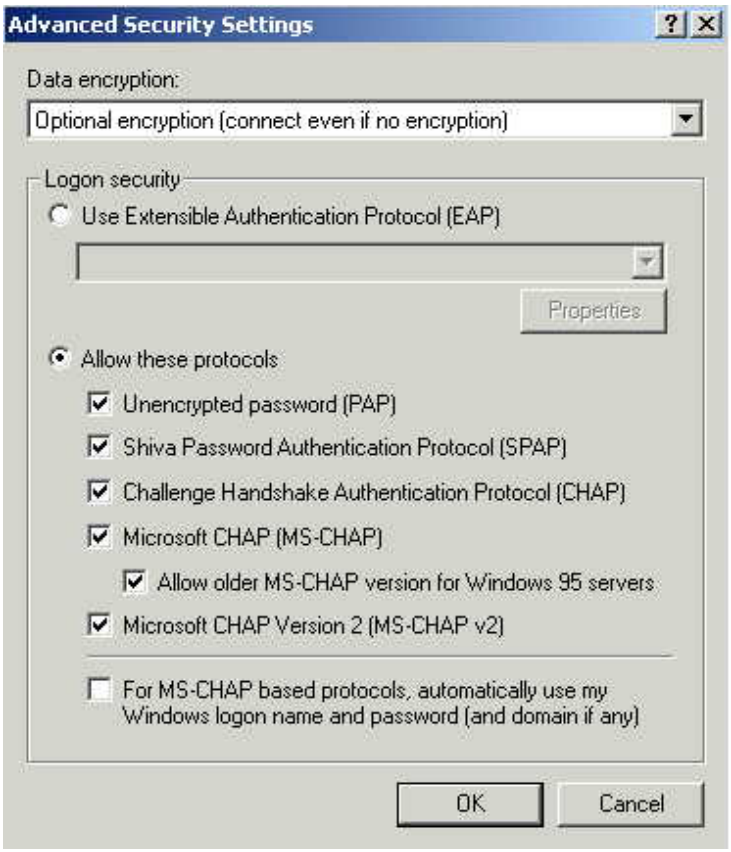
Advanced Security Settings
Data encryption:
Optional encryption (connect even if no encryption)
Logon security
Use Extensible Authentication Protocol (EAP)
Properties
Allow these protocols
Unencrypted password (PAP)
Shiva Password Authentication Protocol (SPAP)
Challenge Handshake Authentication Protocol (CHAP)
Microsoft CHAP (MS-CHAP)
Allow older MS-CHAP version for Windows 95 servers
Microsoft CHAP Version 2 (MS-CHAP v2)
For MS-CHAP based protocols, automatically use my Windows logon name and password (and domain if any)
OK
Cancel

Figure 8.21: Select Allow older MS-CHAP version for Windows 95 servers

Step 4: Select the **Yes** button. The LAP client in Windows 2000 is now able to connect to the LAP server in Windows 98/Me. (Figure 8.22)

**Note**: The IVT Corporation LAP service does not require a password.

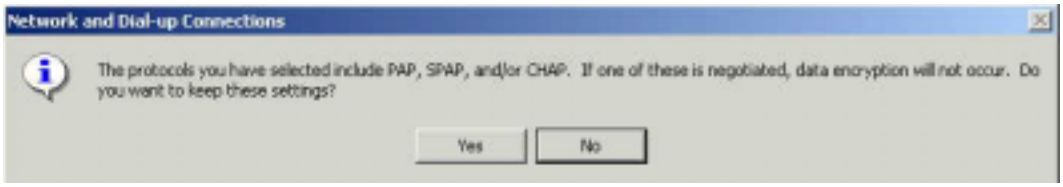
Network and Dial-up Connections
The protocols you have selected include PAP, SPAP, and/or CHAP. If one of these is negotiated, data encryption will not occur. Do you want to keep these settings?
Yes
No

Figure 8.22: Click Yes button

# 9 Object Push

## 9.1 Introduction

The Bluetooth Object Push profile (OPP) is an application that offers a way to send and receive Personal Information Management (PIM) data objects from one Bluetooth-enabled device to or from the other one.

The objects Object Push supports the following four formats:

- Business cards (*.vcf)
- Calendar entries (*.vcs)
- Notes (*.vnt)
- Messages (*.vmg)

The OPP profile can be used in the following scenarios:

- Connecting a computer to a Bluetooth cellular phone (or PDA), and transferring objects from the computer to the cellular phone (or PDA).
- Connecting a computer to a Bluetooth cellular phone (or PDA), and transferring objects from the cellular phone (or PDA) to the computer.
- Connecting two computers and transferring objects between them.

## 9.2 Transfer Objects from a Computer to a Bluetooth Cellular Phone

This section outlines the steps involved in transferring OPP objects from a Computer to a Bluetooth cellular phone.

| Computer A: | Bluetooth Cellular Phone: |
|---|---|
| IVT BlueSoleil™ | Ericsson T39 |
| A Bluetooth Device | |

**Step 1:** Insert the Bluetooth Device into the computer.

**Step 2:** Start BlueSoleil™ in the computer.

**Step 3:** Configure the business card of Computer A.

1. Open the **Service Configuration** window and select the **Object Push** page. In the BlueSoleil™ Main Window, click **Tools | Configuration | My Services** (Figure 9.1).
2. Check the boxes, Send Business Card on Request, Accept Business Card, Accept Calendar Items, Accept Email Messages and Accept Notes.
3. To set 'my business card', click the box **Send My Business Card (*.VCF)**. This opens the **Open File** window. Select a VCF file as your own business card and click the **Open** button. Click the **OK** button on the **Service Configuration** window. If you do not set a business card, the program will generate a business card file

automatically using your computer name. (Figure 9.2)

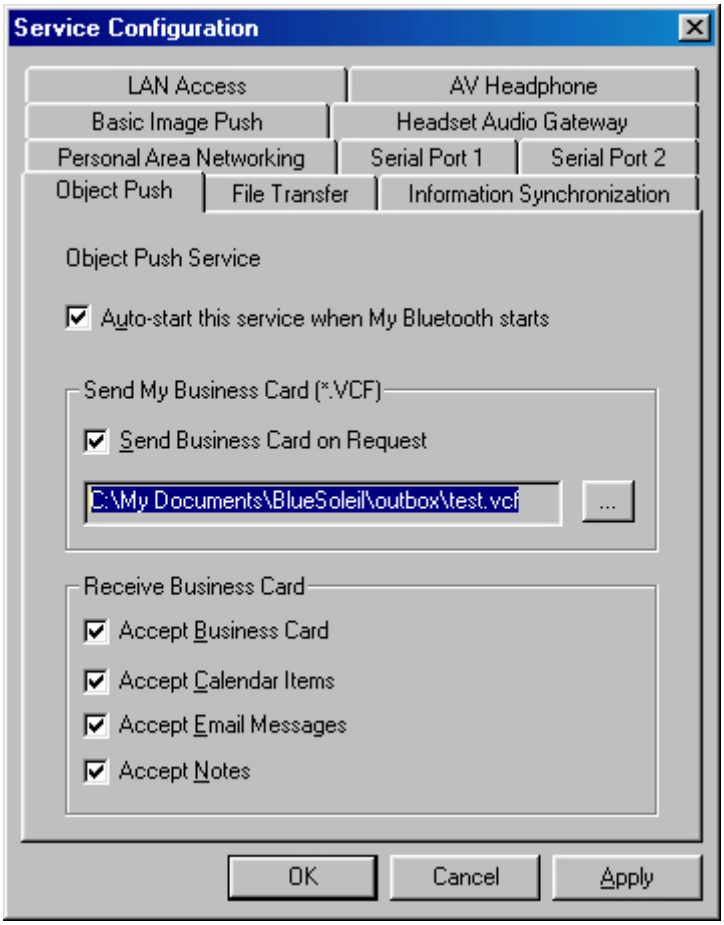


Figure 9.1: Service Configuration

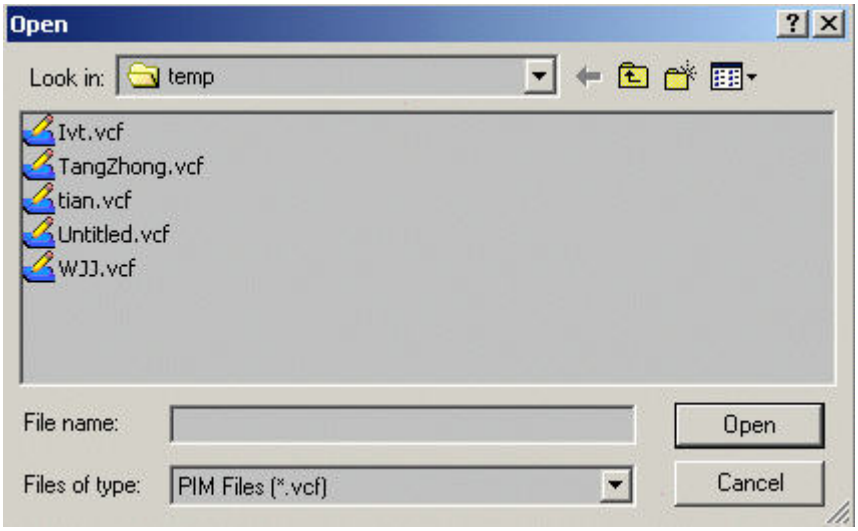


Figure 9.2: Open File

**Step 4:** To obtain a VCF card file from MS Outlook.

- Open MS Outlook, and select the **Contacts** item in **Outlook Shortcuts**. (Figure 9.3)

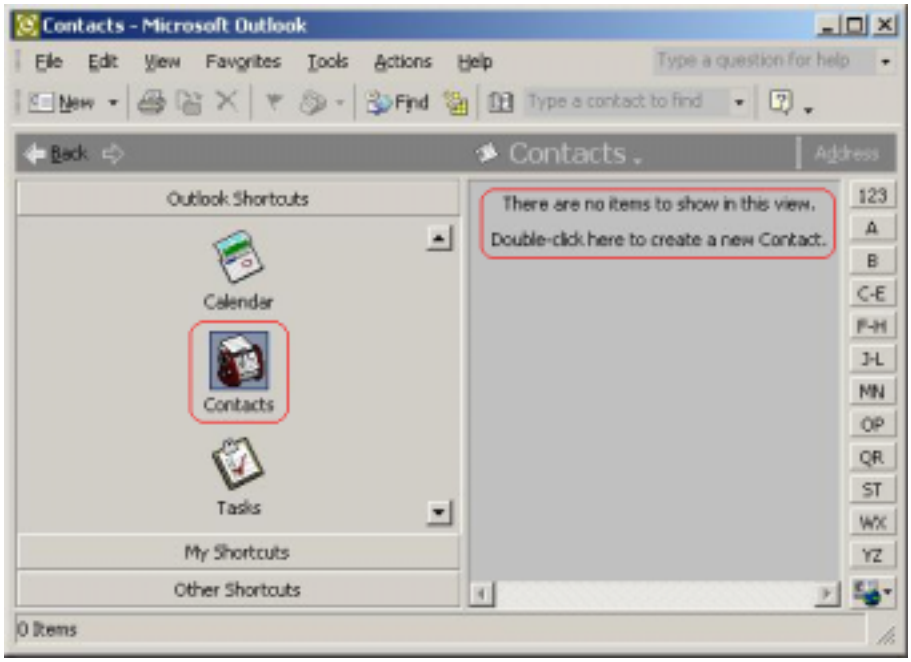


Figure 9.3: MS Outlook main window

- If there are no contacts entered, the following message appears on the main window **"There are no items to show in this view. Double-click here to create a new Contact."** Double-click and a pop-up window appears. (Figure 9.4)

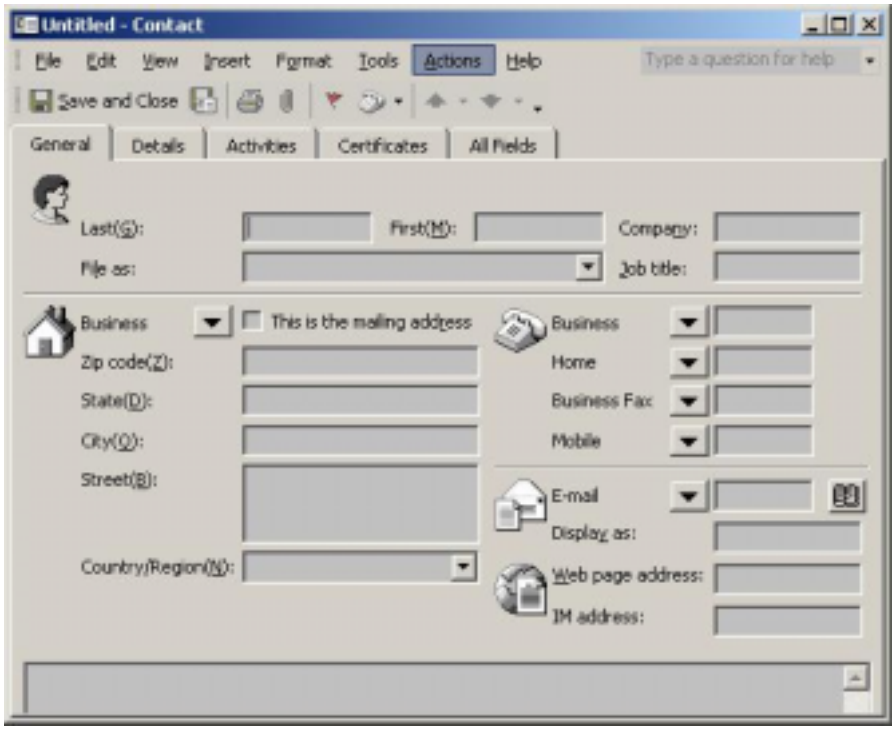


Figure 9.4: Create a new contact

- Enter your Contact information. Click **File | Save as** and a **Save As** window pops up. Select the name of the file and the directory where you want to save the file. Select the **vCard Files (*.vcf)** item in the **Save as type** box. Click the **Save** button. (Figure 9.5)

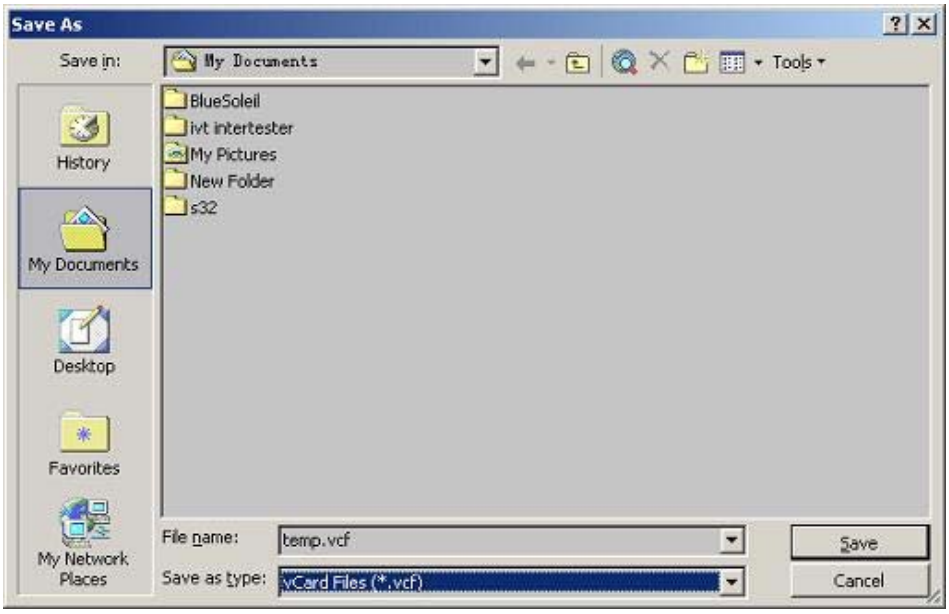


Figure 9.5: Save new Contact

Step 5: Set the T39 to be discoverable.

- Press the **Menu** button on the T39 to find the menu list, and then select the **Extras** item. Press the **Yes** key to enter the **Extras** menu, and then select the **Bluetooth** item. Then select the **Discoverable** item.

Step 6: Pair with T39

If the pairing succeeds, you will see the services of the T39 include the OPP service. (Figure 9.6) If you have never created a shortcut **DUN**, the following dialog pops up asking you whether **Create a Shortcut on the windows desktop**. If you choose **yes**, a shortcut icon called **DUN** will occur on the desktop, otherwise the icon will not occur. For details, please refer to the related part of DUN.

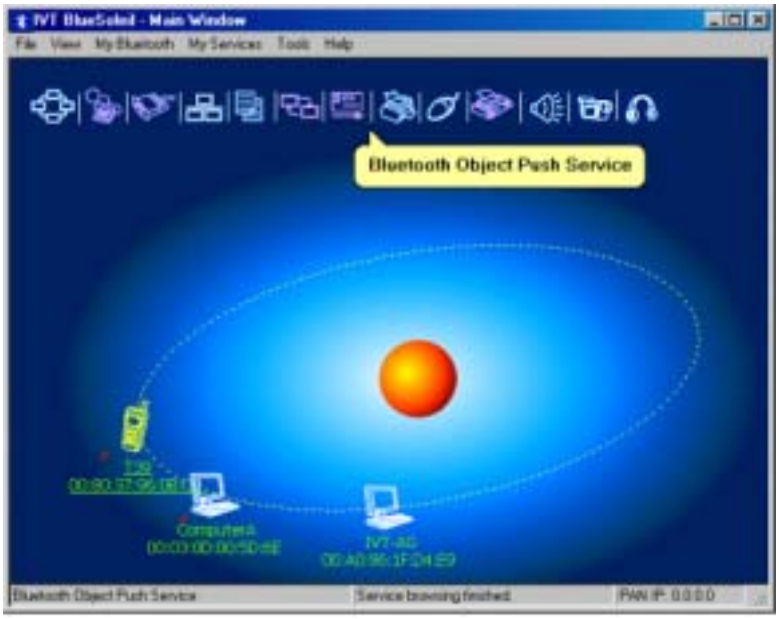


Figure 9.6: Find the services

Step 7: To send or get objects data, right-click the OPP service icon. There are four options (Figure 9.7) on the pop-up menu:

- **Send My Card**: Click this menu item, and a business card from Computer A is sent to the T39.
- **Get Card**: Click this menu item to receive a business card from the T39. Open the folder **inbox** to check if you have received the card.
  (Note: Open the **My Documents** folder on the computer and find a new folder called **BlueSoleil**. Open this folder to find the subfolders **inbox** and **outbox**. **Inbox** is used to deposit the objects received from other Bluetooth devices. **Outbox** is used to deposit the objects you want to send to other Bluetooth devices.)
- **Send Objects**: Click this menu item to send an object in Computer A to the T39 (there are four types of object: *.vcf, *.vcs, *.vmg, *.vnt). Select the objects that you want to send in the window that pops up and click **Open**.
- **Exchange cards**: Click this menu item to exchange business cards between Computer A and the T39.

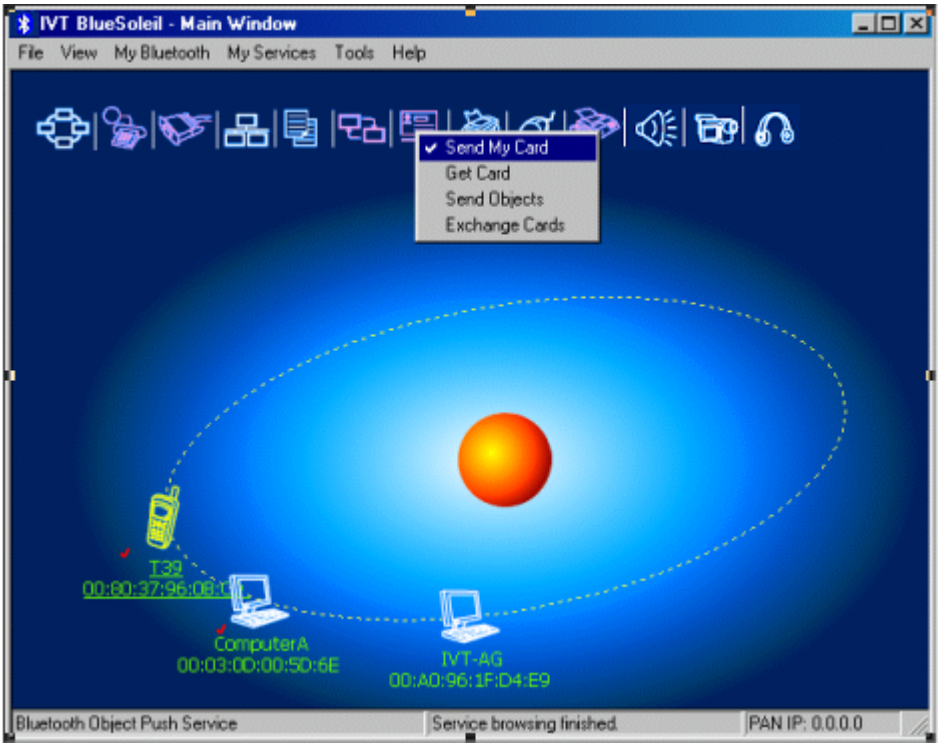


Figure 9.7: Four types of operation

## 9.3 Transfer Objects from a Bluetooth Cellular Phone to a Computer

This section outlines the steps involved in transferring OPP objects from a Bluetooth cellular phone to a computer.

| Computer A: | Bluetooth Cellular Phone: |
| --- | --- |
| IVT BlueSoleil™ | Ericsson T39 |
| A Bluetooth Device | |

Step 1: Insert the Bluetooth Device into the computer.

Step 2: Start BlueSoleil™ in the computer.

Step 3:
- Configure the OPP service attribute of Computer A, and start the OPP service.I

Step 4:
- Discover and pair Computer A on the T39.

Step 5: Start the OPP operation.

- Select Menu | Phone book | Business cards on the T39.
  - To send "my card" from the T39.
    From the **Business cards** menu, select **Send my own** and then select **Via Bluetooth.** The T39 searches the surrounding Bluetooth devices. To send the business card from the T39 to Computer A, select 'Computer A' on the T39 screen.
  - To select an object and send it.
    From the **Business cards** menu, select **Send contact** and then select **Via Bluetooth**. The T39 asks you to select the object that you want to send. Select an object and send it as specified above.
  - To receive a business card.
    From the **Business cards** menu, select **Receive** and then select **Via Bluetooth**. The T39 is now in discoverable status, and you can send an object to it from other Bluetooth devices.
  - To send all business cards.
    From the **Business cards** menu, select **Send all** and then select **Via Bluetooth.** Select the destination device Computer A. The T39 then sends all its *.vcf files to Computer A.

## 9.4 Transfer Objects between Two Computers

This section outlines the steps involved in transferring OPP objects between two Computers (Computer A and Computer B).

| Computer A: | Computer B: |
| --- | --- |
| IVT BlueSoleil™ | IVT BlueSoleil™ |
| A Bluetooth Device | A Bluetooth Device |

Step 1: Insert Bluetooth Devices in both computers.

Step 2: Start BlueSoleil™ in both computers.

Step 3: Start the OPP service on Computer B.

Step 4: Perform an OPP operation. (See "Section 9.3: Transfer Objects from a Bluetooth Cellular Phone to a Computer", Step 5)

## 9.5 Configure OPP Service

In the BlueSoleil™ Service Window, right-click the Object Push icon. To configure 'my OPP service', select **Properties** on the pop-up menu.

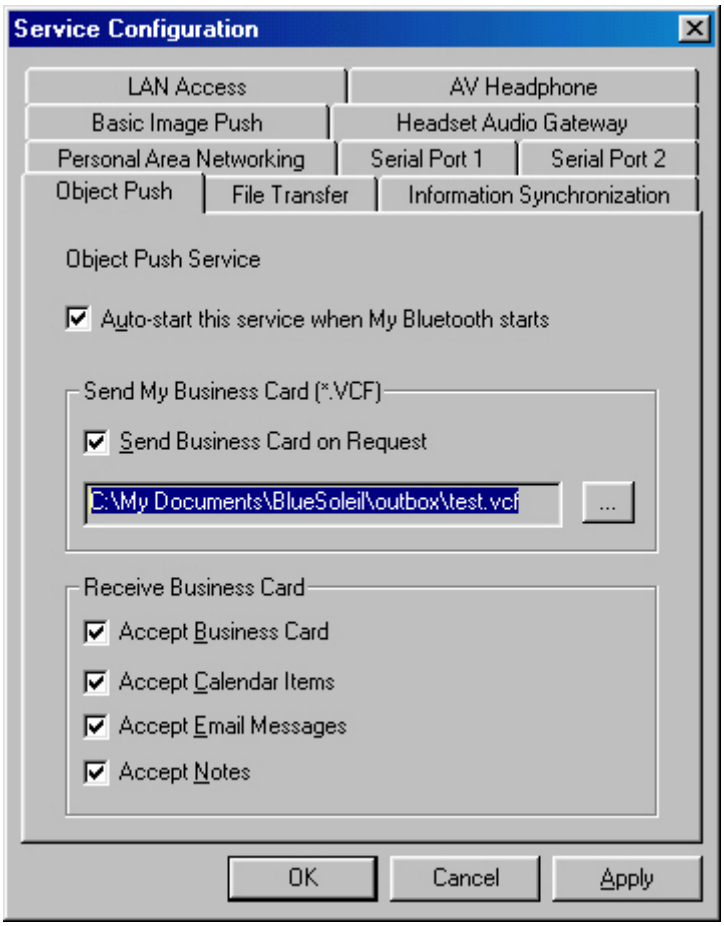


Figure 9.8: Configure OPP service

**Setting Items:**

- **Auto start this service when my Bluetooth starts**
  Select this item if you want to automatically start the OPP service every time BlueSoleil™ starts.
- **My Business Card (*.vcf)**
  You must select your own business card (*.vcf file) every time you start BlueSoleil™. If you forget to do this, BlueSoleil™ creates a *.vcf file using your computer name and regards this file as your own business card.
- **Send Business Card on Request**
  Select this item to allow other users to receive your business card.

- **Receive Business Card**
  There are four possible items here. Each item represents one type of object. You may select the object types that you want to accept.
  - Accept Business Card **to accept business cards (*.vcf)**
  - Accept Calendar Items **to accept calendar items (*.vcs)**
  - Accept Email Messages **to accept email messages (*.vmg)**
  - Accept Notes **to accept notes (*.vnt)**

## 9.6 Using OPP in Microsoft Outlook

### 9.6.1 The GUI of Outlook Application with bluetooth plug-in

After correct installation of BlueSoleil, lunch the Outlook application. If the GUI looks like the following, namely there are four buttons added into the toolbar and **File** menu, the OPP is integrated into Outlook successfully.

**Notice:** both the OPP and Synchronization functionalities are available in Microsoft Office 2000( or higher version) and , BlueSoleil must start first.

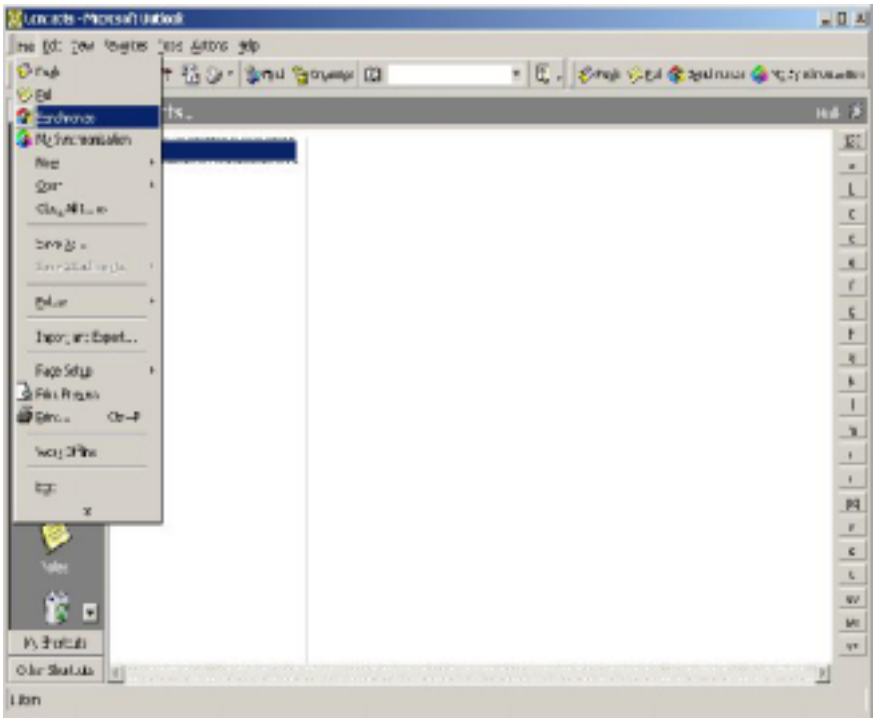

Figure 9.9: OPP and Sync integrated with Outlook

### 9.6.2 The usage of OPP Push-function

Start the Outlook application and select **Contacts** from the shortcuts to browse the **Contacts** folder. Select the item(s) to be pushed then click the **Push** button from the toolbar or **File** menu. If BlueSoleil is running properly, a dialog will appear with all discovered bluetooth devices listed.

From the devices list, user can select the target device and then click the Push button.

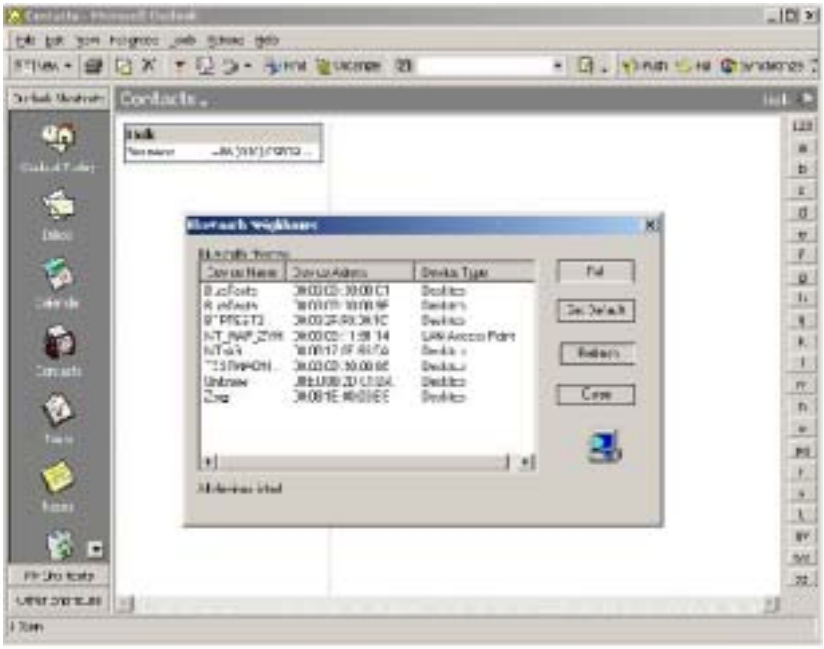

Figure 9.10: Select the target device and click **Push** button

The operation result will be reported on the dialog.

Figure 9.14: Push operation completed Successfully

As to other items, for example, note, message and calendar, the steps are the same with ones above.

### 9.6.3 The usage of OPP-Pull function

Click the **Pull** button from toolbar or **File** menu then the devices list dialog will appear. Select the target device from the list and click the Pull button to perform OPP-Pull function.

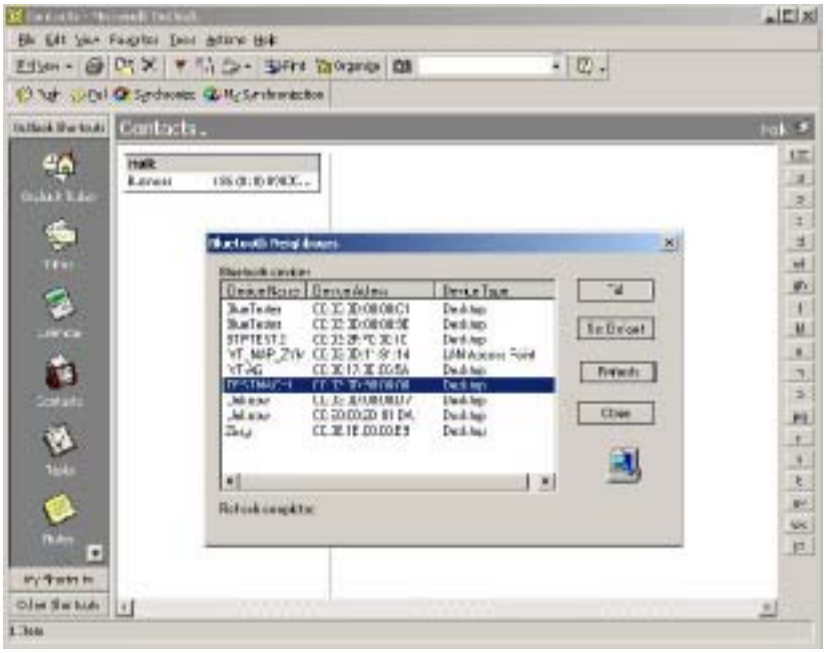

Figure 9.15: Before Pull only one card named "holk"

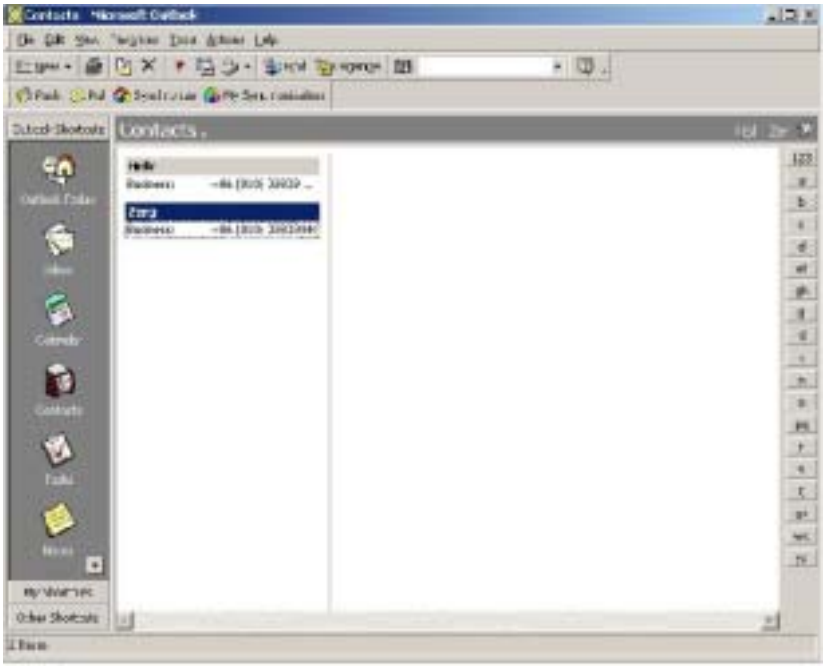

Figure 9.16: The card named "zerg" is pulled in.

If the operation completes successfully the newly pulled card is imported into Outlook.

# 10 Synchronization

## 10.1 Introduction

Using Bluetooth Synchronization (SYNC), Bluetooth devices can synchronize messages, notes, calendars and cards with each other.

The objects Synchronization (SYNC) supports are:

- Business cards (*.vcf)
- Calendar entries (*.vcs)
- Notes (*.vnt)
- Messages (*.vmg)

The SYNC application is typically used in the following scenarios:

- A computer exchanging PIM (Personal Information Management) data with a cellular phone or PDA.
- Two computers exchanging PIM data with each other.

## 10.2 Exchange PIM Data with a Cellular Phone

This section outlines the steps involved in connecting a computer to a Bluetooth cellular phone. The cellular phone works as a server that provides the SYNC service.

| Computer A: | Bluetooth Cellular Phone: |
|---|---|
| IVT BlueSoleil™ | Ericsson T39 |
| A Bluetooth Device | |

Step 1: Insert the Bluetooth Device into the computer.

Step 2: Start BlueSoleil™ in the computer.

Step 3: Configure the T39.

- Set T39 to be discoverable.

Step 4: Start synchronization.

- Now use the computer running BlueSoleil™ to start the synchronization. (See "Section 9.3: Transfer Objects from a Bluetooth Cellular Phone to a Computer", Step 5).

## 10.3 Set up SYNC Connection between Two Computers

This section outlines the steps involved in setting up a SYNC connection between two computers, Computer A and Computer B. Computer A works as a server that provides the BlueSoleil™ SYNC service. Computer B works as a client that uses the SYNC service provided by Computer A.

| Computer A: | Computer B: |
|---|---|
| IVT BlueSoleil™ | IVT BlueSoleil™ |
| A Bluetooth Device | A Bluetooth Device |

Step 1: Insert the Bluetooth Devices into each computer.

Step 2: Start BlueSoleil™ in each computer.

Step 3: Start the BlueSoleil™ SYNC service on Computer A. Before starting the SYNC Server, it may need to be configured. To configure the server, follow the steps below:

- In the Main Window click **View | Service Window**
- In the Service Window, right-click the Information Synchronization icon. Select **Properties** on the pop up menu.
- Set the option you require, and then click **OK.** (Figure 10.1)

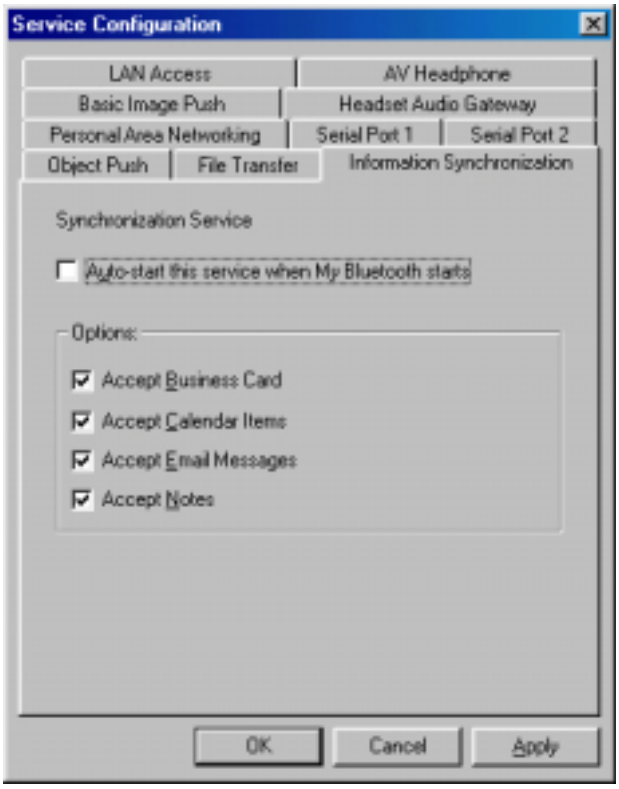


Figure 10.1: Service Configuration

Step 4:

- Connect to the SYNC service of Computer A. (Figure 10.2)

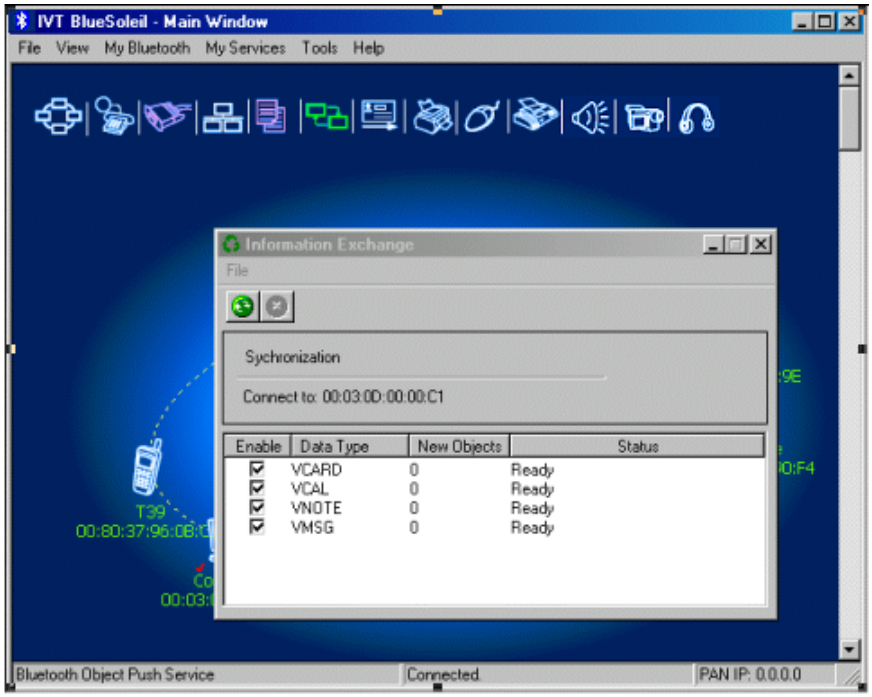


Figure 10.2: Connection is established successfully

- The SYNC clients can now start synchronization. Press the green button to begin synchronization. (Figure 10.3)

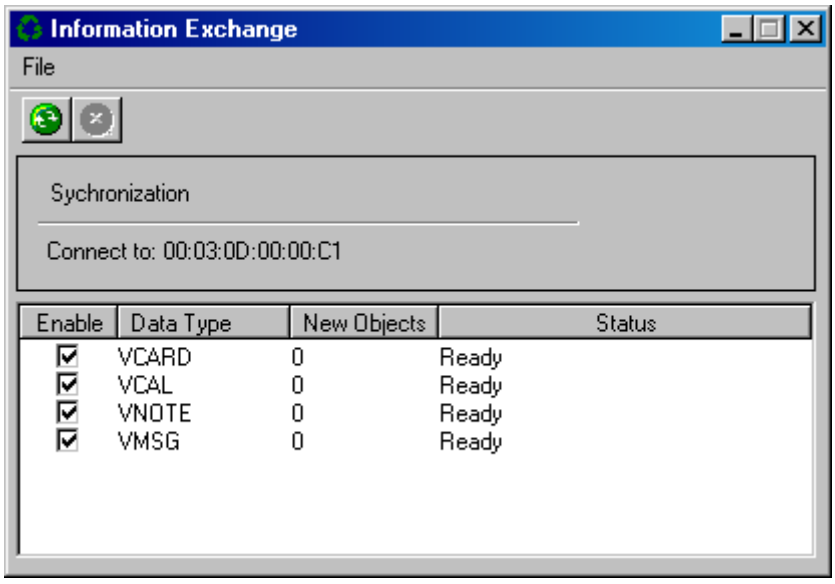


Figure 10.3: Press the green button

Advanced Usage:

- Before synchronization select the data type that you want to exchange. Leave the checkbox unchecked to disable the object type that you do not support.
- During synchronization push the red button if you want to stop the synchronization.

- Open Microsoft Outlook to check the information data that saved in the folder of Contacts(VCARD), Calendar(VCAL), Notes(VNOTE) and Inbox(VMSG) after synchronization. (Figure 10.8)

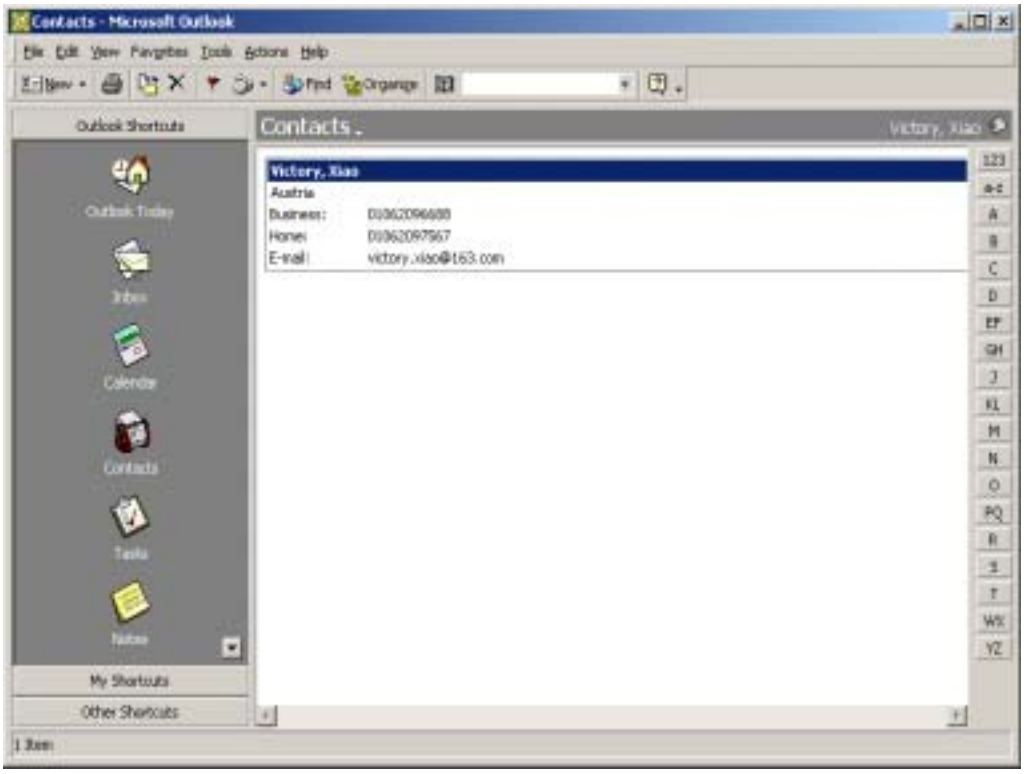


Figure 10.8: Microsoft Outlook

## 10.4 Synchronization Configuration

In the BlueSoleil™ Service Window, right-click the Information Synchronization icon. To configure the synchronization service select **Properties** on the pop-up menu. (Figure 10.9)

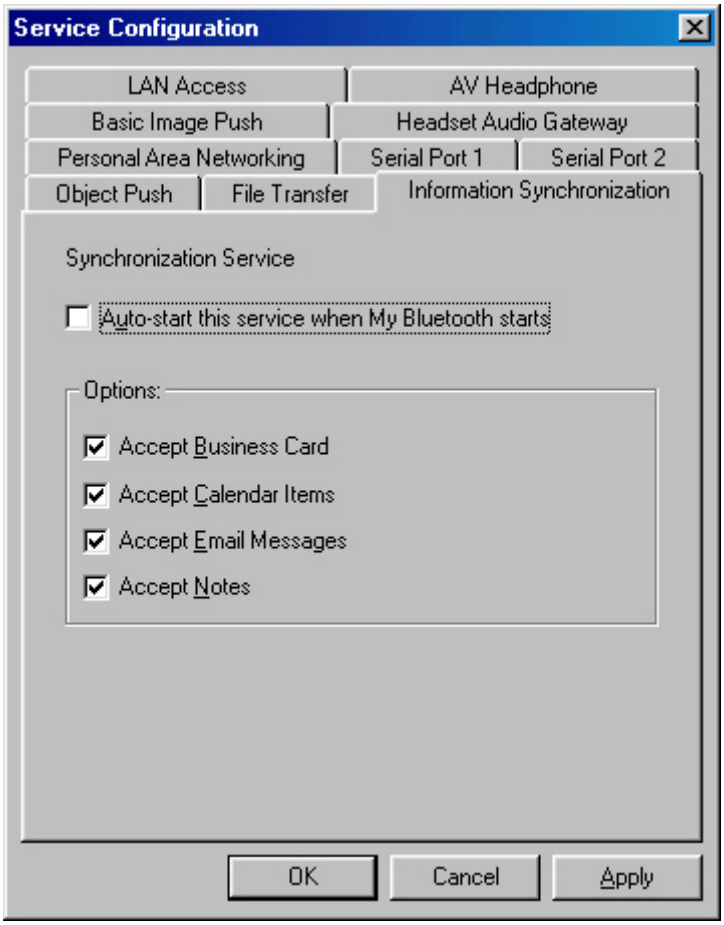


Figure 10.9: Service Configuration

**Setting Items:**

- **Auto start this service when my Bluetooth starts**
  Check this item to start my synchronization service automatically every time BlueSoleil™ is started.
- **Options**
  This service supports options for vCard, vCalendar, vMessage and vNote data types. You can select the data type you want to support.

## 10.5 Using Synchronization in Outlook

After correct installation of BlueSoleil the GUI of Outlook application looks like figure 9.12.

Notice: This function requires Microsoft Office 2000 or higher version and is available only when BlueSoleil is running properly.

### 10.5.1 The usage of synchronization

Click the **Synchronization** button from the toolbar or **File** menu, from the devices list dialog user can select the target device to synchronize with.

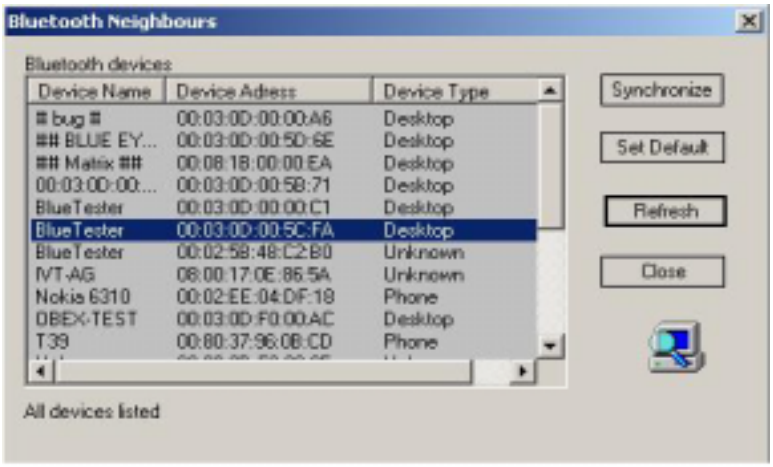


Figure 10.10: Select the target device to synchronize with

After selecting the target device, the Sync-dialog appears.

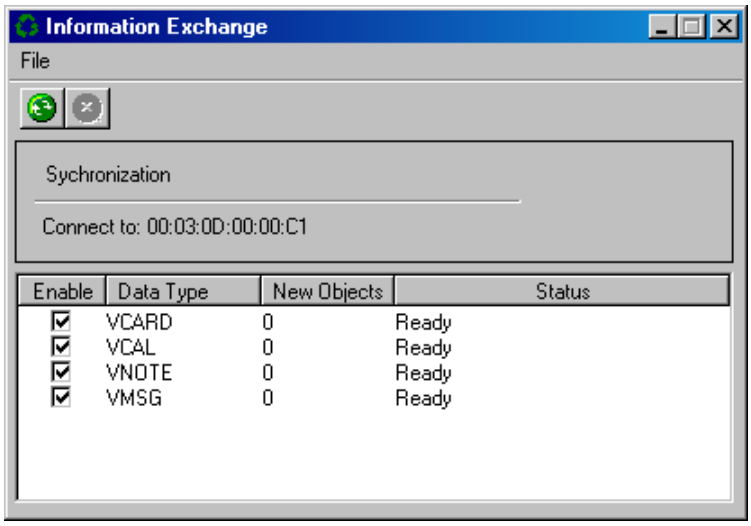


Figure 10.11: Choose the item type to synchronize

Click the Sync button from the toolbar or File menu to start the synchronization process, during and after the synchronization process the current status will be displayed to users.

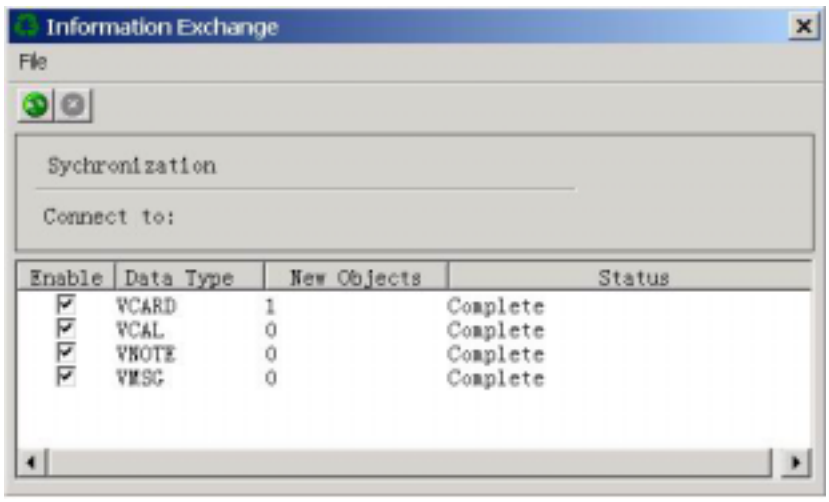


Figure 10.12: The status when operation finished

Just like the OPP-Pull function, the synchronization's result will be visible in Outlook application. The following two diagrams show the **Note** folder before and after the synchronization.

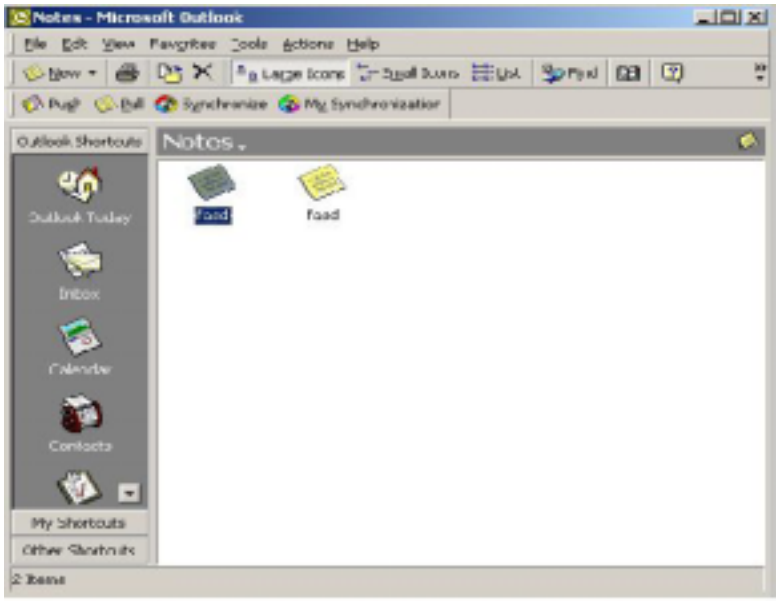


Figure 10.13: Before Synchronization

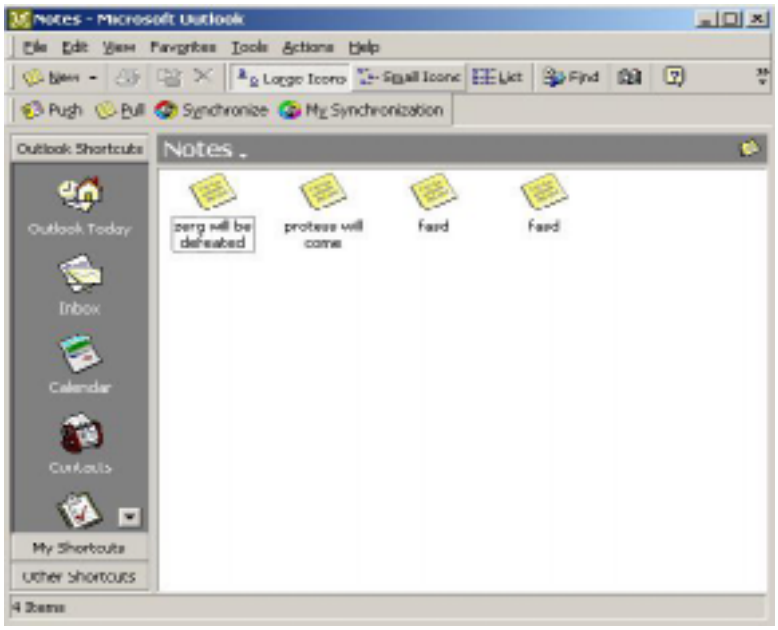


Figure 10.14: After Synchronization

User can set the most often-used device to default device. From the devices list dialog please choose the right device and then click **Set Default** button. So when synchronize next time user can click **My Synchronization** button to start synchronization directly avoiding the time-consuming selecting device steps. When mouse move onto the button the message tip will display current default device information.

# 11 Hardcopy Cable Replacement

## 11.1 Introduction

The Bluetooth Hardcopy Cable Replacement profile (HCRP) provides services to replace the cable between a host and peripheral device with a Bluetooth link. The most common devices using these services are laptops and desktop computers, however other devices are not excluded.

The HCRP profile can be used in the following scenario:

- Print a document using a Bluetooth Printer.

## 11.2 Print a Document Using a Bluetooth Printer

This section outlines how to print a document from Computer A (client) using a Bluetooth Printer (server)

| | |
|---|---|
| Computer A:<br>Notebook/Laptop<br>A Bluetooth Device<br>Windows 2000<br>IVT BlueSoleil™ | Bluetooth Printer B:<br>Bluetooth Printer |

Step 1: Insert the Bluetooth Device into the computer.

Step 2: Start BlueSoleil™ in the computer.

Step 3: Turn on the Bluetooth printer to provide the HCRP service for Computer A.

Step 4: **Connect the two devices**.

1. Search for Bluetooth devices on Computer A
2. Search the HCRP services of Printer B.
3. Double-click the HCRP service icon to connect Computer A and the Bluetooth printer.

Step 5: Once the connection is established, please check:

- If there is no driver installed for the Bluetooth printer, then BlueSoleil™ displays a message asking the user to install a driver for the Bluetooth Printer, see the Windows system icons in the bottom right hand corner of the Windows desktop. (Figure 11.1) Install the driver for the printer on Computer A and set its port to COMx.
- If there is already a driver installed for the Bluetooth printer, a message appears indicating that the Bluetooth printer is ready (Figure 11.2). BlueSoleil™ sets the Bluetooth printer's port to COMx (e.g. COM3). If there are

several drivers for the Bluetooth printer installed on Computer A, BlueSoleil™ automatically sets one of them as the Bluetooth printer.

Figure 11.1: Bluetooth Printer Driver is not installed

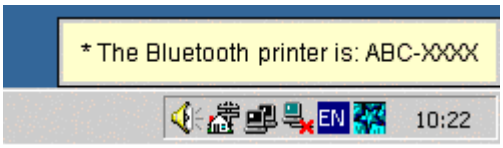


Figure 11.2: Bluetooth Printer Driver is ready

Step 6: Print documents.

- Computer A and Bluetooth Printer B are now connected. On Computer A, open the document that you want to print. Select **File |Print.** Then select the Bluetooth printer and print.

Step 7: Disconnect the Bluetooth Printer.

- Right-click the HCRP service icon; select **Disconnect** on the pop up menu.

# 12 Human Interface Device

## 12.1 Introduction

A typical Bluetooth Human Interface Devices (HID) is a Bluetooth-enabled mouse, keyboard or joystick. The HID service allows wireless communication to Bluetooth HID devices.

The HID profile can be used in the following scenarios:

- Connecting a computer to a Bluetooth Mouse.
- Connecting a computer to a Bluetooth Keyboard.

## 12.2 Connect a Computer to a Bluetooth Mouse

This section outlines how to connect a computer (Computer A) to a mouse (Bluetooth Mouse B).

| Computer A: | Bluetooth Mouse B: |
|---|---|
| Desktop | Bluetooth wireless mouse |
| A Bluetooth Device | |
| Windows 2000 | |
| IVT BlueSoleil™ | |

Step 1: Insert the Bluetooth Device into the computer.

Step 2: Start BlueSoleil™ in the computer and set the security level to low using the **Tools | Configurations | Security** menu.

Step 3: Power on the Bluetooth mouse. (Bluetooth Mouse B)

Step 4: **Connect to HID service**:

1. Search for Bluetooth devices in Computer A until you find Bluetooth Mouse B.
2. Double-click the Bluetooth Mouse B device icon to find it's HID service. If found, the HID service icon turns red. (Figure 12.1)

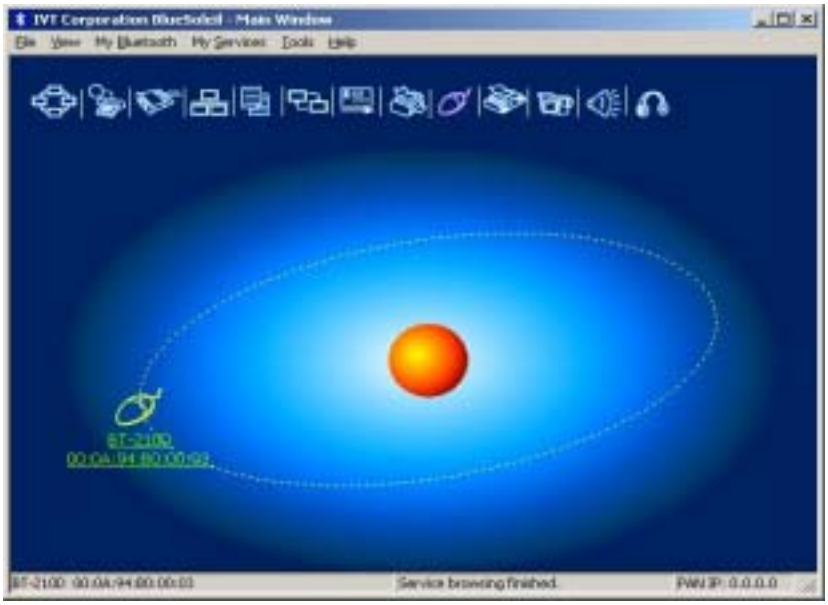

Figure 12.1: Find Bluetooth mouse and its service

Step 5: Double-click the HID service icon to connect to Mouse B. After the connection is successfully set-up, a dashed line appears between the center ball and the Mouse B icon. The HID service icon turns green (错误！未找到引用源。).

Step 6: Install drivers for Bluetooth mouse.

- If this is the first time Computer A has connected to a Bluetooth mouse, wait for a few seconds to allow Windows to install drivers for a Bluetooth mouse.
- You will see two new devices in Computer A: **Bluetooth HID Mouse** in 'Human Interface Devices' class and **HID-compliant mouse** in 'Mice and other pointing devices' class. (Figure 12.2)

Step 7: Now the Bluetooth mouse is ready to use. You can use it as a legacy PS/2 or serial mouse.

Step 8: To disconnect Mouse B.

- Right-click the HID service icon in the Main Window and click **Disconnect**. Alternatively right-click Mouse B in the Main Window and select **Disconnect | Human Interface Device**.

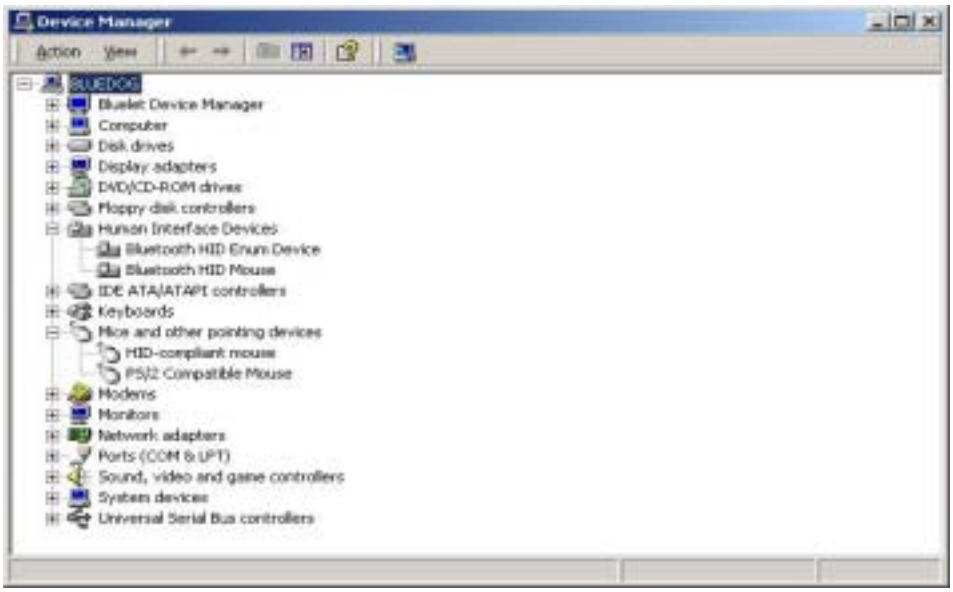


Figure 12.2: New HID mouse device in Device Manager

## 12.3 Connect a Computer to a Bluetooth Keyboard

This section outlines how to connect a computer (Computer A) to a keyboard (Bluetooth Keyboard B).

| | |
|---|---|
| Computer A:<br><br>Desktop<br><br>A Bluetooth Device<br><br>Windows 2000<br><br>IVT BlueSoleil™ | Bluetooth Keyboard B:<br><br>Bluetooth wireless keyboard |

Step 1: Insert the Bluetooth Device into the computer.

Step 2: Start BlueSoleil™ in the computer and set the security level to low using the **Tools | Configurations | Security** menu.

Step 3: Power on the Bluetooth keyboard. (Bluetooth Keyboard B)

Step 4: Connect to Keyboard. (Figure 12.3)

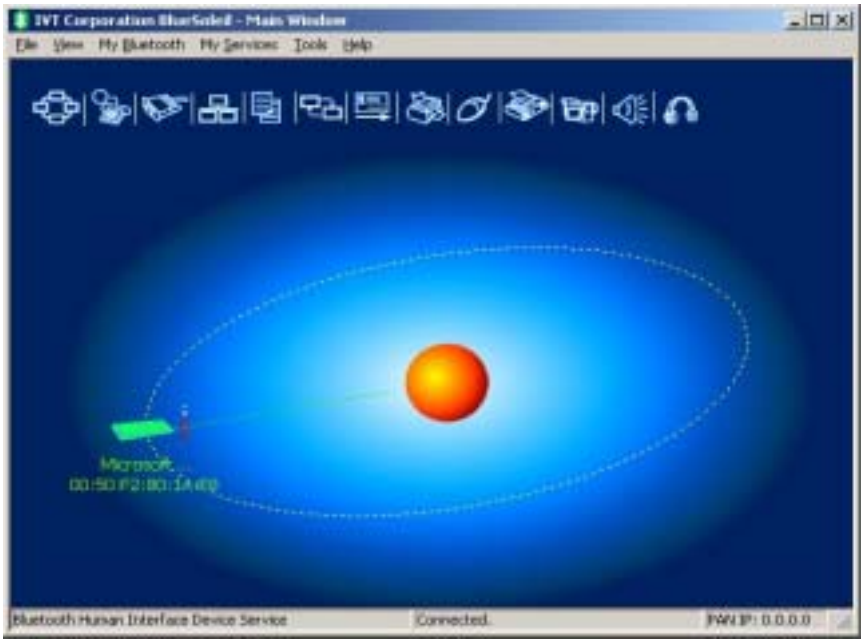
IVT Corporation BlueSoleil - Main Window
File View My Bluetooth My Services Tools Help
Bluetooth Human Interface Device Service
Connected.

Figure 12.3: Connect to Bluetooth keyboard

Step 5: Install drivers for the Bluetooth keyboard.

- If this is the first time Computer A has connected to a Bluetooth keyboard, wait for a few seconds to allow Windows install drivers for a Bluetooth keyboard.
- You will see two new devices in Computer A: **Bluetooth HID Keyboard** in 'Human Interface Devices' class and **HID Keyboard Device** in 'Keyboards' class. (Figure 12.4)

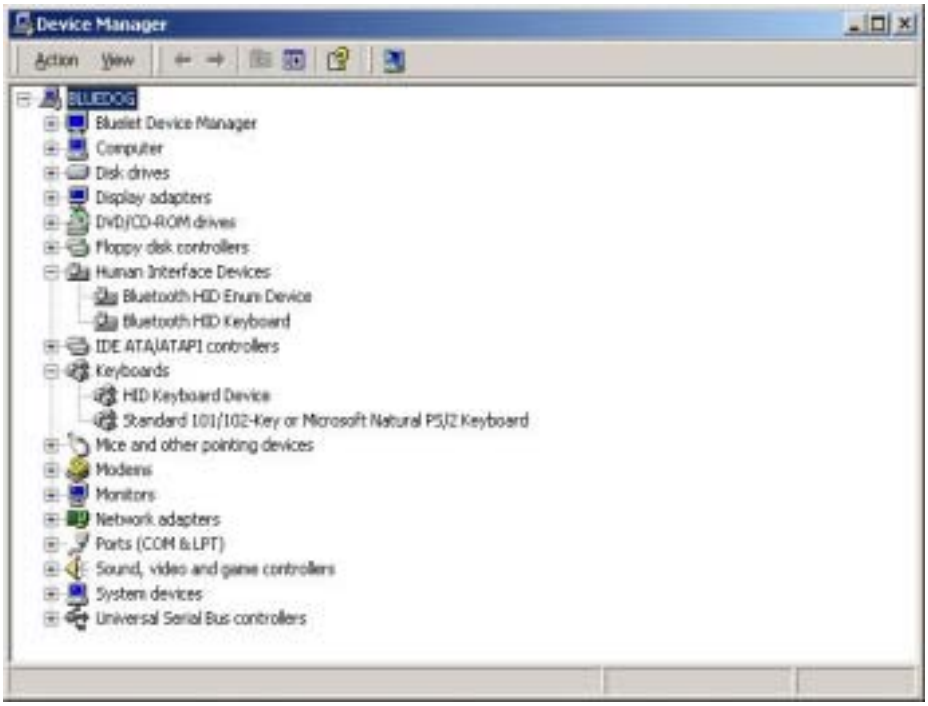


Figure 12.4: New HID keyboard device in Device Manager

Step 6: Now the Bluetooth keyboard is ready to use. You can use it as a legacy PS/2 keyboard.

legacy PS/2 keyboard.

Step 7: To disconnect Keyboard B.

- Right-click the HID service icon in the Main Window and click **Disconnect**. Alternatively right-click Keyboard B in the Main Window and select **Disconnect | Human Interface Device**.

# 13 FAX

## 13.1 Introduction

The Bluetooth Fax service allows a Bluetooth-enabled client to send fax messages wirelessly through a fax modem on another Bluetooth device or a cellular phone. The other Bluetooth device or the cellular phone is called the fax gateway (server) as it provides the service to send/receive fax messages.

The FAX profile can be used in the following scenario:

- A Bluetooth computer sends/receives fax messages through a Bluetooth cellular phone or Bluetooth fax modem.

## 13.2 Connect to a FAX Gateway from a Computer

This section outlines the steps involved in a computer (client) sending a fax message through a Bluetooth cellular phone.

| | |
|---|---|
| Computer A:<br>Notebook/ Laptop<br>A Bluetooth Device<br>Windows 2000<br>IVT BlueSoleil™ | Bluetooth Cellular Phone:<br>Ericsson T39 cellular phone |

Step 1: Insert the Bluetooth Device in the computer.

Step 2: Start BlueSoleil™ in the computer.

Step 3:
- Set the Ericsson T39 to be discoverable so that Computer A can find the T39.

Step 4:
- Add Computer A to the paired device list in the T39.

Step 5: Connect to the phone FAX service .

## 13.3 Using FAX software on a bluetooth computer

There are many commercial or free fax software could be found. And they all can work with IVT BlueSoleil. Since these fax software have their own MMI feature, the usages will not be listed step by step.

Please check the following setting in FAX software before using it:

- The FAX modem must be set to "**Bluelet Fax Modem**". This "**Bluelet Fax Modem**" device is added to windows modem device list when BlueSoleil is installed.

And please make sure the bluetooth connection has been set up between the computer and FAX Gateway（refer to Section 12.2）.

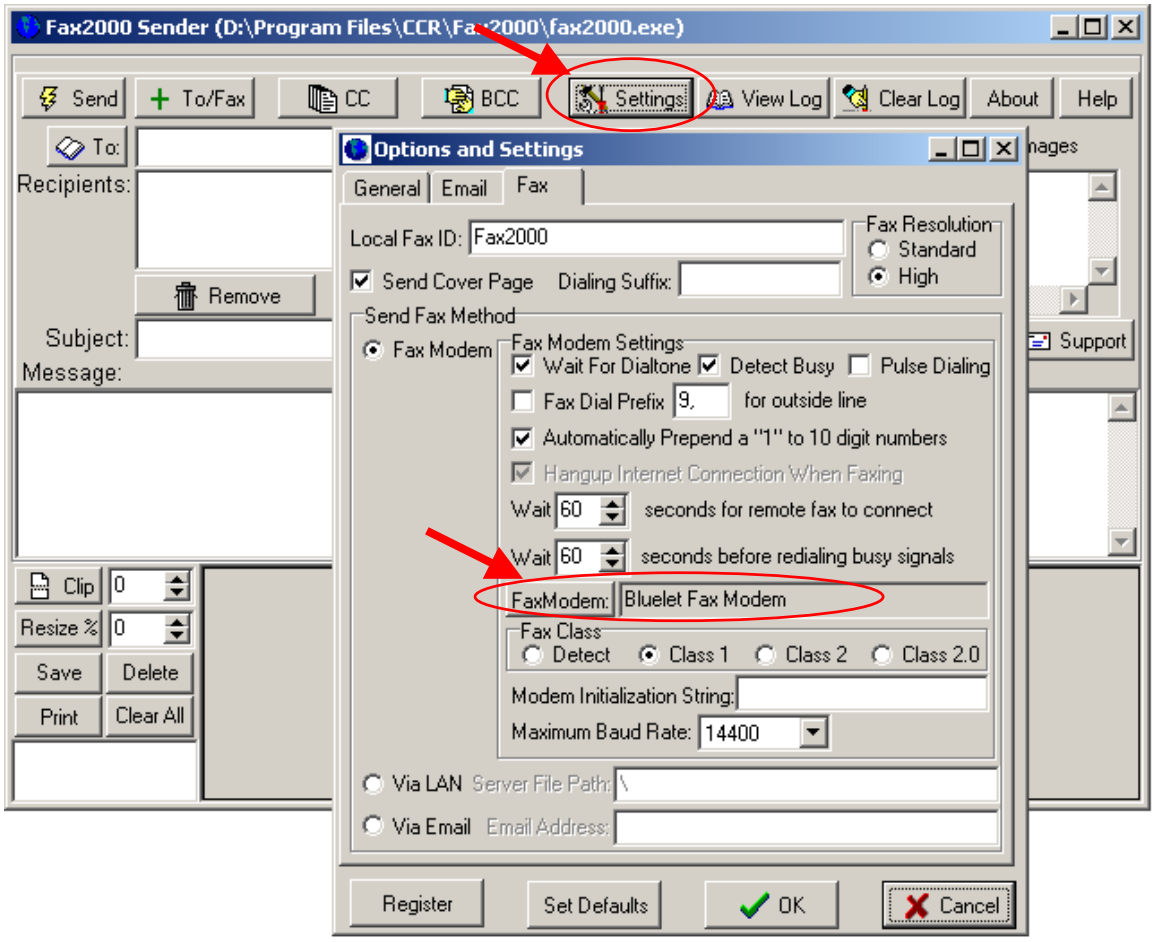


Figure 13.1 Settings in Fax2000

# 14 Headset

## 14.1 Introduction

The Bluetooth Headset Profile defines the procedures implementing audio wireless transmission on SCO channels. It provides services to replace the cable between an Audio Gateway and Headset with a Bluetooth link.

**Audio Gateway (AG)** – This is the device that is the gateway of the audio, both for input and output. Typical devices acting as Audio Gateways are cellular phones and personal computer.

**Headset (HS)** – This is the device acting as the Audio Gateway's remote audio input and output mechanism.

Now BlueSoleil acts as Audio Gateway, which can initiate a connection to a headset and can also provide service for headset to be connected.

The Headset profile in BlueSoleil can be used in the following scenario:

- Play music from computer to Headset wirelessly.
- Record sound from Headset to computer wirelessly.
- Chat with chatting tools using Headset as voice input/output device.

## 14.2 Create an audio connection between computer and Headset

This section outlines how to create an audio connection between Computer A and Headset. Here, the name of the demo headset is EL-235.

| **Computer A** | **Headset** |
|---|---|
| Notebook/Laptop | Bluetooth Headset |
| A Bluetooth Device **supporting SCO** | |
| Windows 2000 or Windows XP | |
| IVT BlueSoleil™ | |

**Step 1:** Insert the Bluetooth Device into computer A.

**Step 2:** Start BlueSoleil™ on computer A.

**Step 3:** Power on Headset EL-235 to supply headset service and make it discoverable.

**Step 4:** Search for Headset device on Computer A.

- Double-click the **My Device icon** until you find the device Headset EL-235.

**Step 5:** Find the headset service of Headset EL-235 .

- Double-click the Headset EL-235 device icon on Computer A.
- Enter the Bluetooth passkey (Generally,0000), if necessary, to start authentication.
- Once authentication is complete, the Headset service is found.

**Step 6:** Connect to Headset EL-235.

After creating pairing relationship between Headset and dongle, we can establish the audio connection in several ways:

- Right-click Headset service icon; select **Connect** on the pop-up menu. The headset ring to alert the user. After the user answers the call, the connection will be established. (Figure 14.2) But, if user does not answer after 20 rings, the connection will be released.
- Make sure you have started your Headset AG service in Service Window. You can press answer key on your headset, and then it will initiate a connection to BlueSoleil.

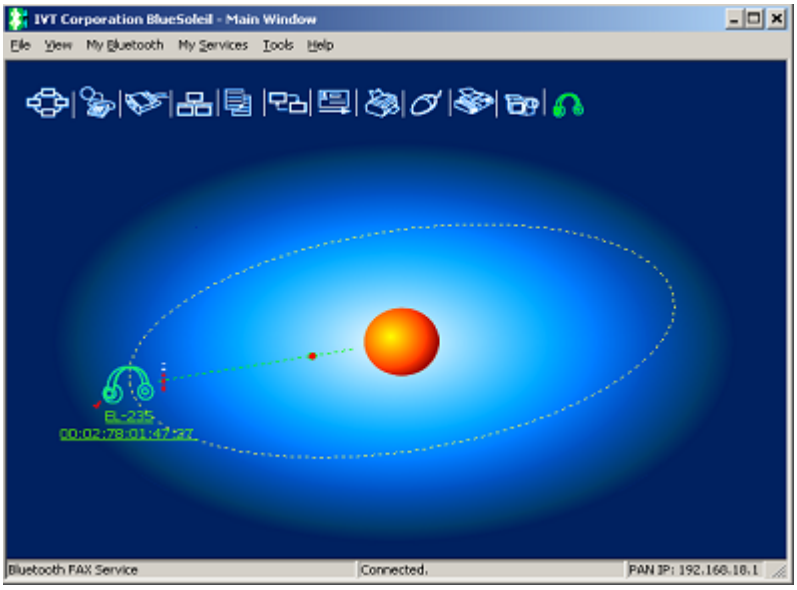


Figure 14.2: The connection is successfully established

**Step 7:**

- Play music, record sound or chatting, please refer to Chapter 14.3

**Step 8:** After using Headset, you can disconnect the connection as follows.

- If BlueSoleil initiate connection to Headset,
  Right-click Headset service icon; select **Disconnect** on the pop-up menu.
- Or, press answer key on Headset to release this connection.
- If BlueSoleil is connected by headset,
  Press answer key on Headset to release this connection.
- Or, stop Headset AG service in Service Window.

## 14.3 Using Headset Profile in BlueSoleil

### 14.3.1 Play music from computer to Headset wirelessly

After creating audio connection (for details about how to create an audio connection, please refer to Chapter 14.2), you can play music files using popular music player on Computer A. Open music files (e.g. mp3, WMA, rm etc.) with Winamp or other media player program and play them, the music can be heard on Headset. (Figure 14.3)

Figure 14.3 Play Music Files on Computer A

### 14.3.2 Record sound from Headset to computer wirelessly.

After creating audio connection (for details about how to create an audio connection, please refer to Chapter 14.2), you can record sound on Computer A. (Figure 14.4)

Figure 14.4: Record Sound on Computer A

### 14.3.3 Chat with chatting tools using Headset as voice input/output device.

After creating audio connection (for details about how to create an audio connection, please refer to Chapter 14.2), you can chat with you friends by chatting tools such as MSN, NetMeeting and so on.

Take NetMeeting as an example.

Open NetMeeting Program, select **Tools | Audio Tuning Wizard…**, click **Next**, the following dialogoccurs, choose as show in this dialog. Click **Next** until finishing configuration. (Figure 14.5)

Figure 14.5: Audio Tuning Wizard on Computer A

# 15 Advanced Audio Distribution

## 15.1 Introduction

The Bluetooth Advanced Audio Distribution Profile (A2DP) defines the procedures that realize distribution of audio content of high-quality in mono or stereo on ACL channels. It provides services to replace the cable between an Audio Source and Sink with a Bluetooth link.

The A2DP profile can be used in the following scenario:

- Play music between computer and AV Headphone wirelessly.
- Play music between two computers wirelessly.

## 15.2 Play music between computer and AV Headphone wirelessly

This section outlines how to play music from Computer A and listen to the music on AV Headphone B.

| **Computer A** | **AV Headphone B** |
|---|---|
| IVT BlueSoleil™ | IVT Stereo Headphone |
| A Bluetooth Device | |
| Windows 2000 or Windows XP | |

**Step 1:** Insert the Bluetooth Device into computer A.

**Step 2:** Start BlueSoleil™ on computer A.

**Step 3:** Power on IVT Stereo Headphone to supply AV Headphone service.

**Step 4:** Search for AV Headphone B on Computer A.

- Double-click the **My Device icon** until you find the device AV Headphone B.

**Step 5:** Find the AV Headphone service of AV Headphone B.

- Double-click the AV Headphone B device icon on Computer A. (Figure 15.1)
- Enter the Bluetooth passkey (if security is set to **High** on either side) to start authentication.
- Once authentication is complete, the AV Headphone service is found.

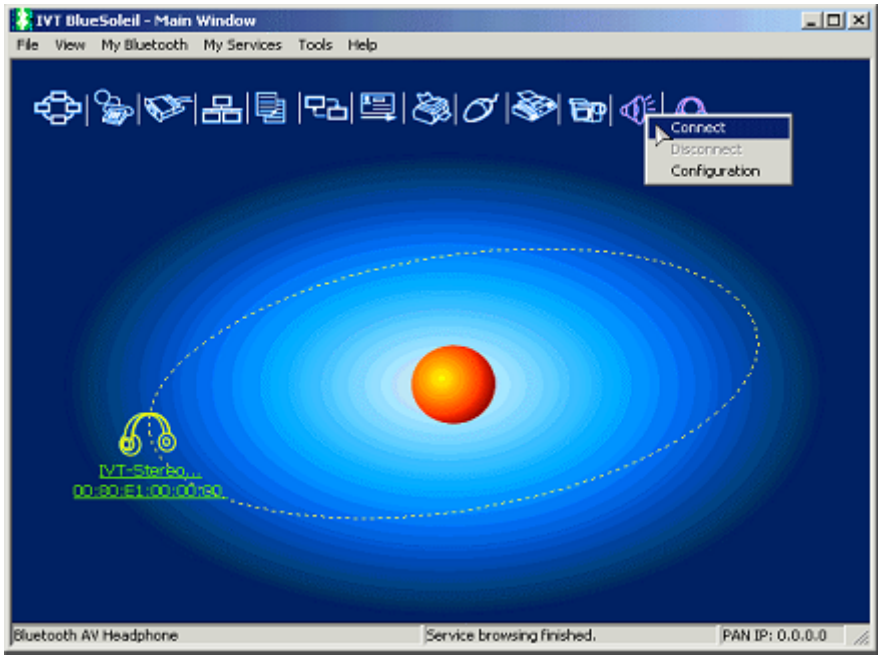


Figure 15.1: Double-click the Computer B device icon

**Step 6:** Connect to AV Headphone B.

- Right-click the AV Headphone service icon; select **Connect** on the pop-up menu. The connection will be established. (Figure 15.2)

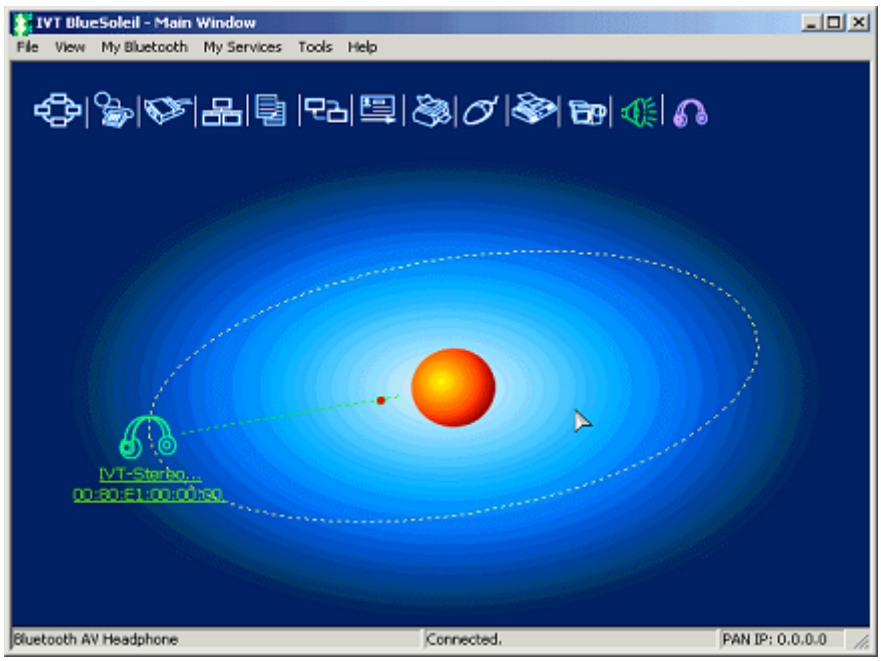


Figure 15.2: The connection is successfully established

**Step 7:** All the audio media played on Computer A can be heard on AV Headphone B.

- Open music files (e.g. mp3, CD, rm etc.) with Windows Media Player or RealOne Player or other media player and play them, the music can be heard on AV Headphone B. (Figure 15.3, Figure 15.4)

- When playing VCD or DVD on Computer A, the audio part can be listened on AV Headphone B.

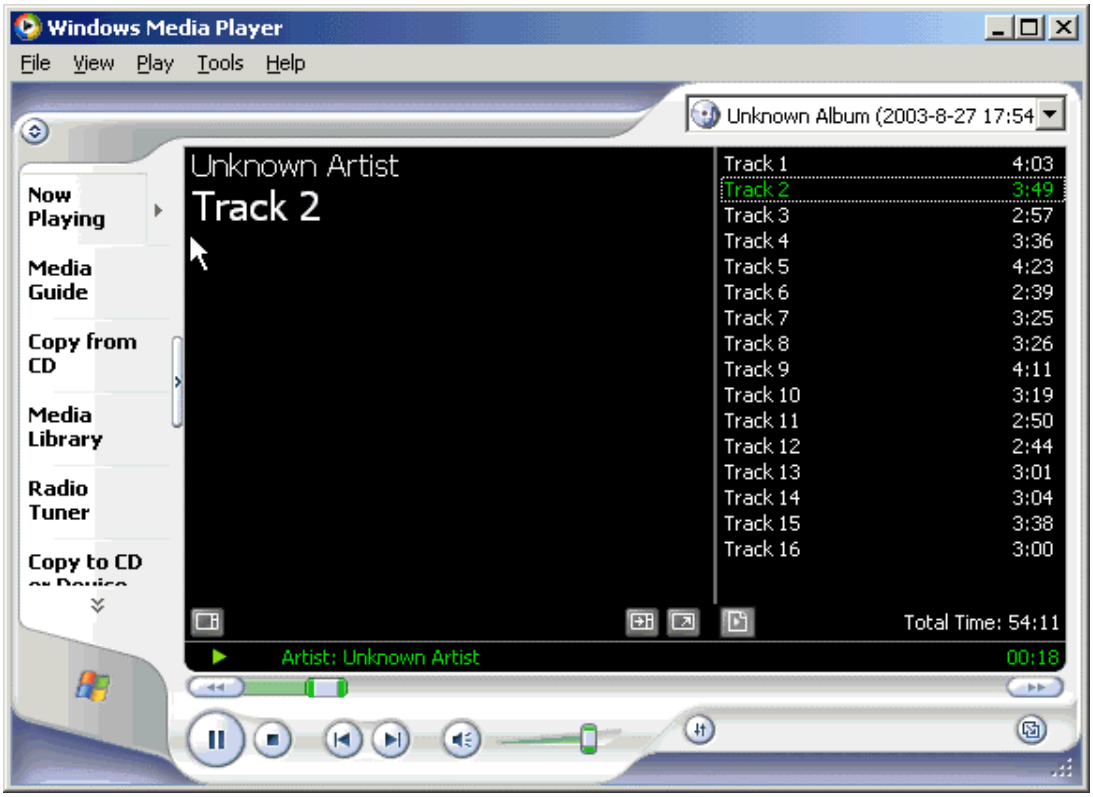


Figure 15.3: Play Music Files on Computer A

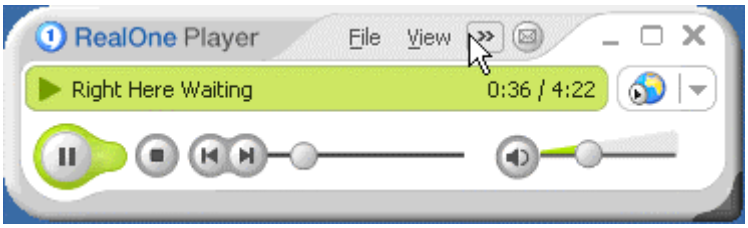


Figure 15.4: Play Music Files on Computer A

## 15.3 Play music between two computers wirelessly

This section outlines how to play music from Computer A (Client) and listen to the music on Computer B (Server).

| **Computer A:** | **Computer B:** |
|---|---|
| Notebook/Laptop | Notebook/Laptop |
| A Bluetooth Device | A Bluetooth Device<br>A physical Sound Card |
| Windows 2000 or Windows XP | Windows 2000 or Windows XP |
| IVT BlueSoleil™ | IVT BlueSoleil™ |

**Step 1:** Insert the Bluetooth Device into each computer.

**Step 2:** Start BlueSoleil™ on each computer.

**Step 3:** Configure the AV Headphone service on Computer B.

- In the Service Window, right-click the **AV Headphone** icon. Select **Properties** on the pop-up menu.
- The **Service Configuration** window pops up. (Figure 15.5)

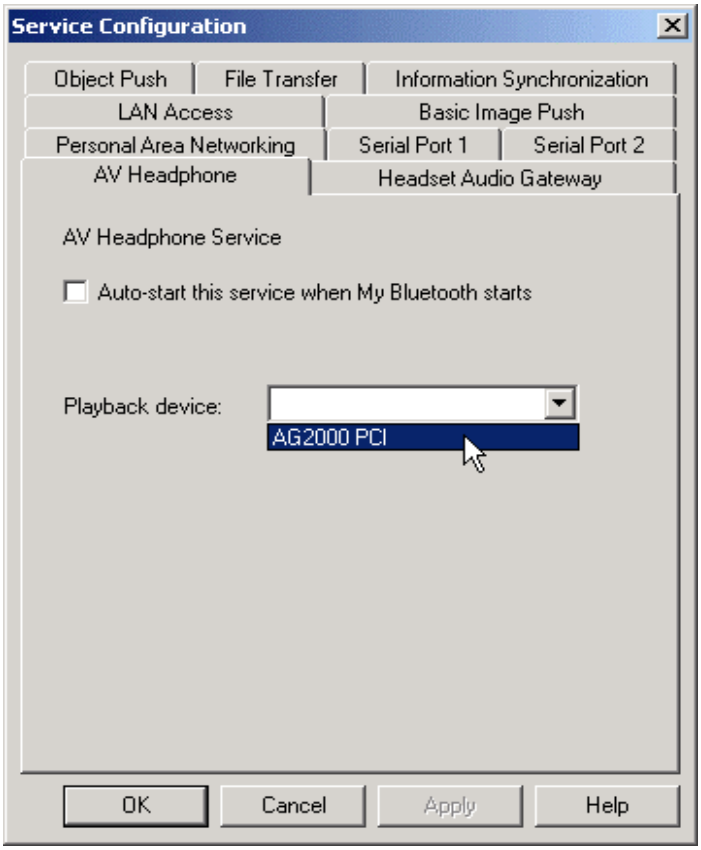


Figure 15.5: Service Configuration Window

- In the **Playback device** field select the device that you want to use. (Figure 15.5) Once the playback device is selected, it will be used until you select another one.
- For the first time the AV Headphone service is started, this step is mandatory. Otherwise, if you don't want to change the layback device, this step can be skipped.

**Step 5:** Start AV Headphone Service on Computer B.

- In the Service Window, right-click the **AV Headphone** icon. Select **Start Service** on the pop-up menu.

**Step 6:** Configure the Codec priority on Computer A.

- In the main Window, right-click the **Bluetooth AV Headphone** icon . Select **Configuration** on the pop-up menu. (Figure 15.6)
- The **Codec Priority Configuration** window pops up.
- The **Codec List** is a descending priority-ranked list. Select the Codec and click button **Up** and **Down** to adjust its priority. When connecting with the AV Headphone Server, the upper Codec has the higher priority to be used.
- If you don't want to change the priority of the Codec, this step can be skipped.

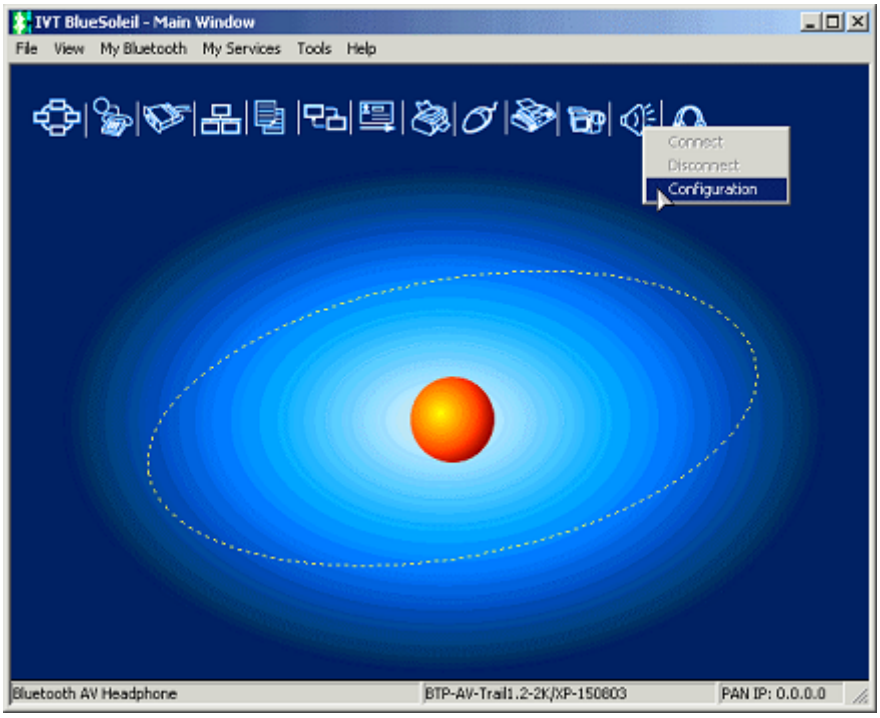


Figure 15.6: Main Window

**Step 7:** Search for Computer B on Computer A.

- Double-click the My Device icon until you find the device Computer B.

**Step 8:** Find the AV Headphone service on Computer B.

- Double-click the Computer B device icon on Computer A. (Figure 15.7)
- Enter the Bluetooth passkey (if security is set to **High** on either side) to start authentication.
- Once authentication is complete, the AV Headphone service is found.

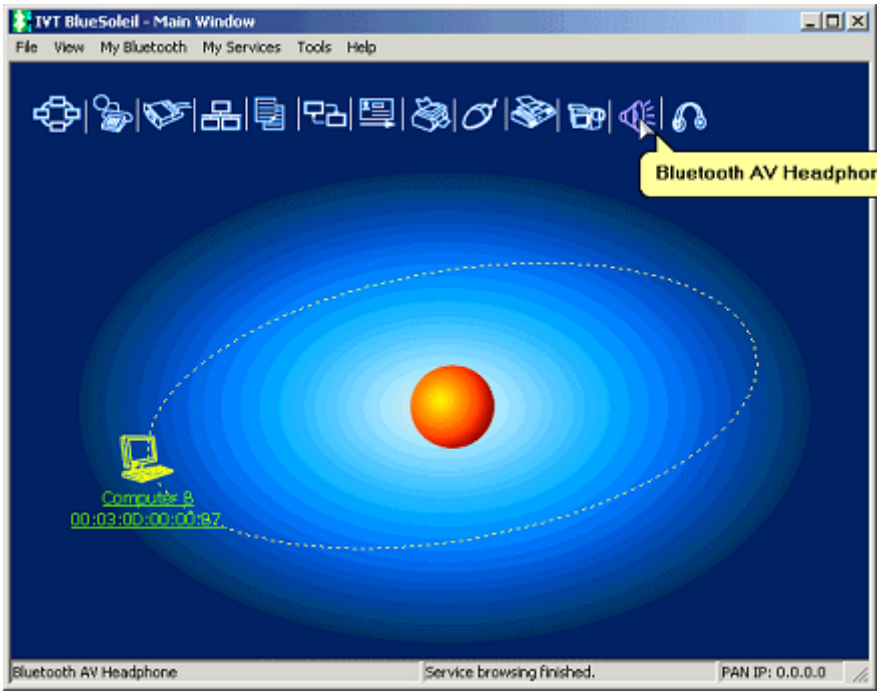


Figure 15.7: Double-click the Computer B device icon

**Step 9:** Connect to Computer B.

- Right-click the AV Headphone service icon ; select **Connect** on the pop-up menu. The connection will be established.
- If SBC Codec is set with higher priority, SBC Codec will be selected for use.
- If mp3 Codec is set with higher priority and there is no professional mp3 Codec installed on Computer A or Computer B. BlueSoleil will select SBC Codec for use.
- If mp3 Codec is set with higher priority and there is professional mp3 Codec installed on both computers. BlueSoleil will select mp3 Codec for use.

**Step 10:** All the audio media played on Computer A can be heard on Computer B.

- Open music files (e.g. mp3, CD, rm etc.) with Windows Media Player or RealOne Player or other media player and play them, the music can be heard on Computer B. (Figure 15.3, Figure 15.4)
- When playing VCD or DVD on Computer A, the audio part can be listened on Computer B.

# 16 Basic Imaging

## 16.1 Introduction

The Bluetooth BIP Profile defines six useful features: Image Push, Image Pull, Advanced Image Printing, Automatic Archive, Remote Camera and Remote Display. BlueSoleil™ support Image Push and Remote Camera now.

The BIP profile in BlueSoleil can be used in the following scenario:

- Push an image from a digital still camera.
- Control a digital still camera remotely.

**Note:** You can also use any device with a camera embedded instead of a digital still camera.

## 16.2 Push an image from a digital still camera.

This section outlines how to push an image from a digital still camera B to computer A.

| **Computer A** | **Digital Still Camera B** |
|---|---|
| IVT BlueSoleil™ | |
| A Bluetooth Device | |

**Step 1:** Insert the Bluetooth Device into computer A.

**Step 2:** Start BlueSoleil™ on computer A.

**Step 3:**
- Make sure Basic Image service is started on computer A.

**Step 4:**
- Power on camera B and Start Bluetooth function on camera B.

**Step 5:**
- Browse images in camera B and select the one you want to push. From a context menu, select to send the image via Bluetooth.

**Step 6:**
- Generally, camera B will display a device list to let you choose to which device you want to push the image; Select Computer A.
- If Computer A is not in the list, you need to start a new search.

Congratulations! The image has now been pushed to the computer successfully. You can select where the received images are stored by selecting **Properties…** in the context menu popped up on the Basic Image service icon.

**Note:** In some digital still camera, step 5 and step 6 may interchange each other.

## 16.3 Control a digital still camera[1] remotely.

This section outlines how to control a digital still camera B via computer A.

| Computer A | Digital Still Camera B |
| --- | --- |
| IVT BlueSoleil™ | |
| A Bluetooth Device | |

**Step 1:** Insert the Bluetooth Device into computer A.

**Step 2:** Start BlueSoleil™ on computer A.

**Step 3:** Power on camera B.

**Step 4:** Start remote camera function on camera B.

**Step 5:** Search for camera B on computer A and connect to its BIP service .

**Step 6:** The **Bluetooth Camera Controller** dialog pops up; the image on the camera's LCD is displayed in this dialog. (Figure 16.1)

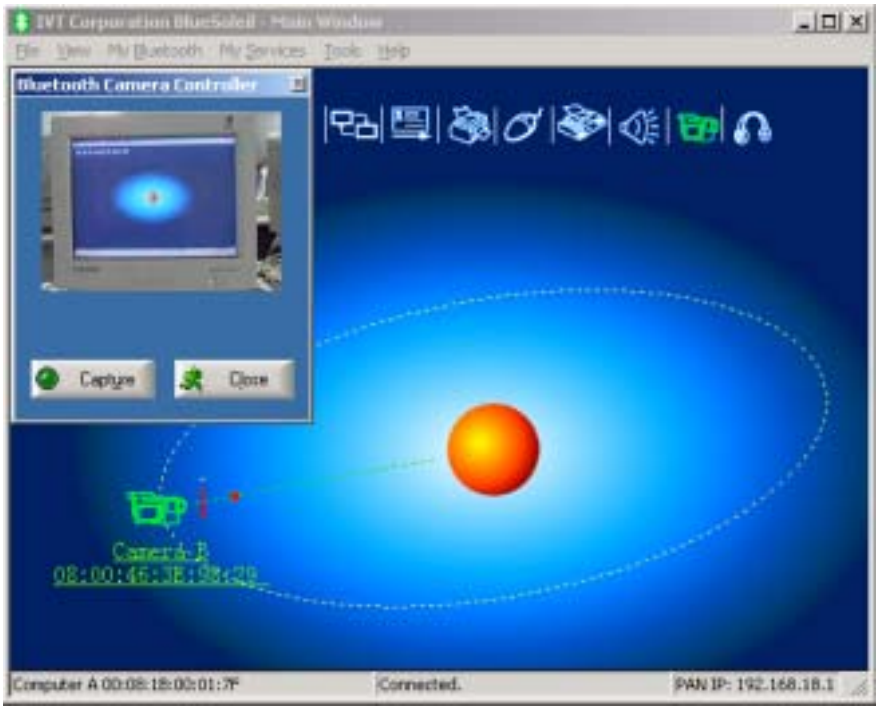


Figure 16.1 Computer A has connected to Camera B

[1] The camera must have remote camera function.

**Step 7:** **Capture pictures:**

1. Click "Capture" button on the dialog. BlueSoleil™ triggers the shutter of the camera to capture the image.
2. A "Save As…" dialog pops up to let you select where to save the image.
3. BlueSoleil™ gets the image from camera B. A progress bar in the **Bluetooth Camera Controller** dialog shows how much the process is finished. (Figure 16.2)
4. When the image is completely downloaded, it is displayed on the computer's screen.

Figure 16.2 BlueSoleil™ is getting the image

**Step 8:** If you want to capture more pictures, just repeat step 7.

**Step 9:** Click "Close" button on the dialog, BlueSoleil™ disconnects computer A with camera B.

# 17 Connection Shortcut

## 17.1 Introduction

Connection shortcut profile is used to save time used in searching for devices and browsing services. Once a connection has been established, it can be saved as a shortcut. The shortcut is then used to re-establish the connection, without having to search for the remote Bluetooth device and required Bluetooth service.

## 17.2 How to use Connection Shortcut

This section outlines how to save a Bluetooth File Transfer connection as a connection shortcut.

| Computer A: | Computer B: |
|---|---|
| Notebook, Laptop | Desktop |
| A Bluetooth Device | A Bluetooth Device |
| Windows 2000 | Windows 2000 |
| IVT BlueSoleil™ | IVT BlueSoleil™ |

Step 1: Establish a File Transfer connection. (See "Section 7.2 Transfer files to/from a Computer", Steps 1 to 7).

Step 2: Save the Bluetooth File Transfer connection shortcut on Computer B.

- Right-click the Computer A device icon and select **Save the Connection as Shortcut | Bluetooth File Transfer**. (Figure 17.1)

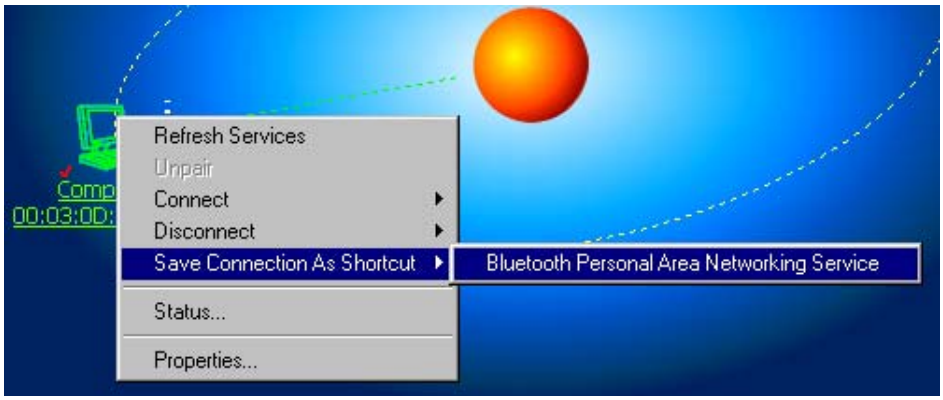


Figure 17.1: Save Bluetooth File Transfer as connection shortcut

Step 3: Close BlueSoleil™ on Computer B by selecting **File | Exit** in the BlueSoleil™ Main Window.

Step 4: Re-start BlueSoleil™ on Computer B.

Step 5: In the BlueSoleil™ Main Window, click **Tools | My Shortcuts**. The **Bluetooth Shortcuts** window pops up. (Figure 17.2)

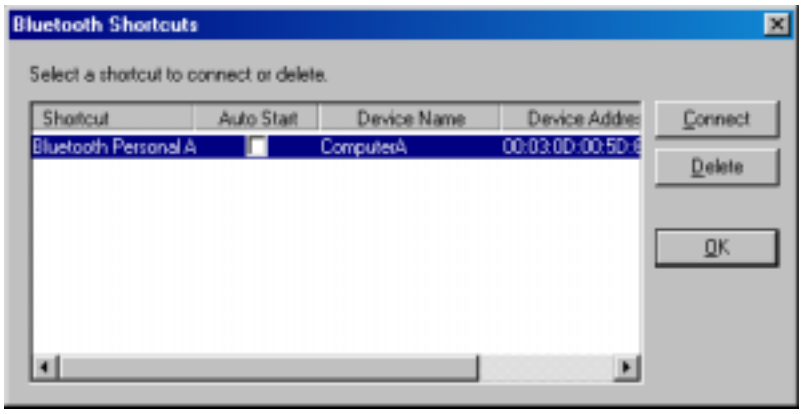


Figure 17.2: Bluetooth Shortcuts window

Step 6: Check the **Auto Start** box and click **Connect**. (Figure 17.3)

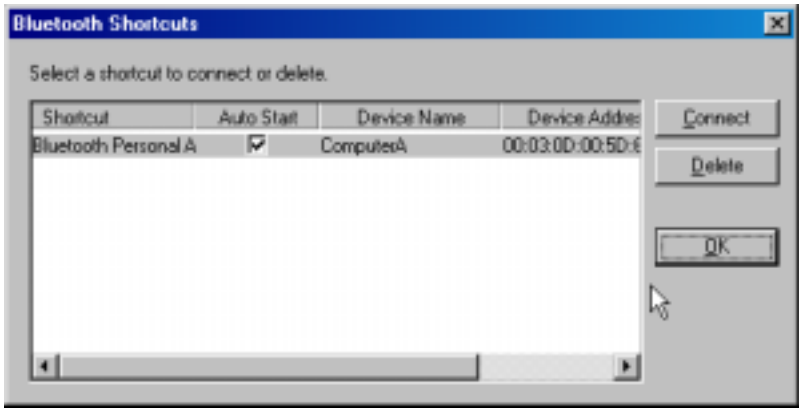


Figure 17.3: Bluetooth Shortcuts

Step 7: Once the connection is successfully established, click **OK** in the **Bluetooth Shortcuts** window. (Figure 17.4)

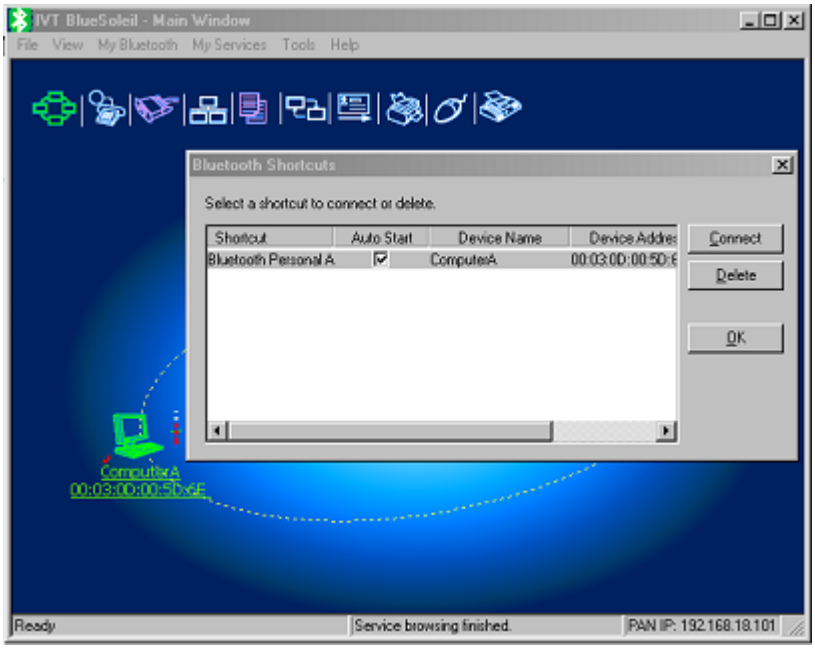


Figure 17.4: Click OK on Bluetooth Shortcuts

Step 8: Start to use the FTP service provided by Computer A.

# 18 Bluetooth Glossary

**Bluetooth Authentication** Bluetooth authentication is the procedure to verify whether another Bluetooth enabled device has the right to access your computer. During this procedure, a Bluetooth passkey is requested on both sides of the connection. If the passkeys are the same, the authentication procedure is a success and the connection can be setup. If the passkeys are different, then authentication fails and a connection cannot be established.

**Bluetooth Authorization** Bluetooth authorization is the procedure to verify whether you are going to allow (authorize) other Bluetooth enabled devices to use Bluetooth services on your Bluetooth enabled device. Every Bluetooth service in your BlueSoleil™ has an authorization setting. The authorization devices list for each service records the devices that have been authorized for that service. The user can change the authorization status for each device.

**Bluetooth Connection** A Bluetooth connection refers to the Bluetooth link that can be set up between two Bluetooth devices. Connected Bluetooth devices have a server/ client relationship. One Bluetooth device provides services and another Bluetooth device uses these Bluetooth services.

**Bluetooth Connection Shortcut** Connection shortcut is used to save time used in searching for devices and browsing services. Once a connection has been established, it can be saved as a shortcut. The shortcut is then used to re-establish the connection, without having to search for the remote Bluetooth device and required Bluetooth service.

**Bluetooth Device** Bluetooth Devices can refer to either of the following:
(1) When referring to the local device configuration, a Bluetooth Device is the local Bluetooth hardware, e.g. Device, UART device, PCMCIA card or BCSP device.
(2) When referring to the Bluetooth application, the Bluetooth device is the Bluetooth system as a whole, e.g. a Bluetooth modem, Bluetooth mobiles or a Bluetooth PDA. A computer together with the BlueSoleil™ and the Bluetooth dongle would also be addressed as a remote Bluetooth device by other Bluetooth devices.

**Bluetooth Device Address** A unique 48-bit address that distinguishes different Bluetooth transceivers. Every Bluetooth device has a unique address so that other devices can find it and communicate with it. The address appears in the form of 00:03:20:00:0D:0A.

**Bluetooth Device Class** According to the Bluetooth standard, every Bluetooth device is assigned a device type, which is represented in the Bluetooth device class. The Bluetooth device class is three bytes in length in the form of 04:01:00. On the computer side, the class may be Server, Desktop or Laptop. Users will be asked to select it during first time set-up.

**Bluetooth Device Inquiry** To use Bluetooth, the user has to first find the remote device. The searching procedure is called device inquiry. There are two kinds of inquiry procedure; General Inquiry and Limited Inquiry. General Inquiry will find all the Bluetooth devices in 'general discoverable mode' and 'limited discoverable mode'. Limited Inquiry will find only the devices in 'limited discoverable mode'.

**Bluetooth Dial-up Networking** This is the implementation of the Bluetooth Dial-up Networking profile (DUN). Using DUN, Bluetooth devices can dial-up to the Internet via a Bluetooth modem or a Bluetooth mobile phone.

**Bluetooth FAX** This is the implementation of the Bluetooth FAX profile (FAX). Using FAX, Bluetooth devices can send a FAX via a Bluetooth mobile.

**Bluetooth File Transfer** This is the implementation of the Bluetooth File Transfer profile (FTP). Bluetooth File Transfer enables the transfer files between Bluetooth devices.

**Bluetooth HCRP** This is the implementation of the Bluetooth Hardcopy Cable Replacement profile (HCRP). HCRP provides services to replace the cables between hosts and peripheral devices with a Bluetooth link. HCRP is mainly used for wireless printing.

**Bluetooth Information Synchronization** This is the implementation of the Bluetooth Synchronization profile (SYNC). Using Synchronization, Bluetooth devices can synchronize messages, notes, calendars and cards with each other.

**Bluetooth LAN Access** This is the implementation of the Bluetooth LAN Access profile (LAP). Using LAP, Bluetooth devices can access Local Area Network via LAN access points.

**Bluetooth Object Push** This is the implementation of the Bluetooth Object Push profile (OPP). Using OPP, Bluetooth devices can transfer messages, notes, calendars and cards with each other.

**Bluetooth Passkey** In the Bluetooth authentication procedure, a Bluetooth passkey is requested on both connection sides. The same Bluetooth passkey should be input on both sides. If the passkeys are the same, the authentication procedure is successful and connections can be setup. If the passkeys are different, the connection and authentication will fail.

**Bluetooth Peripheral Device** This is the implementation of the Bluetooth Human Interface Device profile (HID). By using HID, Bluetooth peripheral input devices such as a Bluetooth mouse or keyboard, can remotely interface with the host computer.

**Bluetooth Personal Area Networking** This is the implementation of the Bluetooth Personal Area Networking profile (PAN). Using PAN, Bluetooth devices can connect to each other to form ad-hoc networks. They can form a TCP/IP network or connect to a Local Area Network and the Internet.

**Bluetooth Printer** This is the implementation of the Bluetooth Hard-copy Cable Replacement profile (HCRP) as a printer. Bluetooth Printer allows Bluetooth devices to wirelessly print documents to a Bluetooth printer.

**Bluetooth Security** Bluetooth security is an important part of the Bluetooth wireless communication technology. Bluetooth security enables illegal access to your computer to be rejected. There are three levels of security: Low, Medium and High. In Low level, there is no security check. In Medium level, remote Bluetooth devices can browse your services. Security is set on every service. The service can be set to request or not to request for authentication and authorization. If you request for authentication, the remote device will be asked to enter the same passkey as the one in your computer. Otherwise, the Bluetooth passkey is not requested. If authorization is set, the remote device has to be in the authorized devices list.

**Bluetooth Service** A Bluetooth device may offer certain functions for other Bluetooth devices to use. These functions are called Bluetooth services. For example, a Bluetooth mobile phone can offer four services, which include synchronization, dial-up networking, file transfer and serial port. In BlueSoleil™, all services need to be started manually before use..

**Bluetooth Service Browse** A remote Bluetooth device can provide one or more Bluetooth services. To use the services that the remote device provides, the user has to first find the services. This is called service browse.

**Bluetooth Serial Port** This is the implementation of the Bluetooth Serial Port profile (SPP). SPP emulates a serial port over Bluetooth, for the Bluetooth device.

**Bonding** Bonding is the creation of a relationship between two devices, which are known to each other prior to the bonding procedure. A user initiates the bonding procedure and enters a passkey to create a bond between two devices. This differs from the authentication procedure where the user is requested to enter a passkey during the establishment of the link.

**Connectable** Bluetooth devices can be connectable or non-connectable. When the device is connectable, other devices can connect to it.

**DHCP** The Dynamic Host Configuration Protocol (DHCP) is an Internet protocol for automating the configuration of computers that use TCP/IP.

**Bluetooth Dongle** A Bluetooth device which can be added onto a computer or notebook to make it Bluetooth enabled, A Bluetooth dongle is typically a USB device.

**General Discoverable** Bluetooth devices have three modes: General discoverable, Limited discoverable and Non-discoverable mode. A Bluetooth device will respond to a General Inquiry if it is in general discoverable or limited discoverable mode.

**HID** A Human Interface device such as a keyboard or mouse.

**ICS (Internet Connection Sharing)** For more detailed information about ICS, please refer to the Microsoft Windows help topic: Internet Connection Sharing.

**Limited Discoverable** Bluetooth devices have three modes: General discoverable, Limited discoverable and Non-discoverable mode. In Limited discoverable mode, a Bluetooth device will only respond to a Limited Inquiry.

**LAN** A LAN is a Local Area Network.

**LAN Access Point** One of entities defined in the LA profiles, the LAN Access Point acts like a router between a Bluetooth piconet and an external network.

**NAT** Network Address Translation (NAT) is used to re-map IP numbers from one range to another range of network addresses.

**Non-Connectable** A Bluetooth devices can be connectable or non-connectable. When it is non-connectable, other devices cannot connect to it. This is used in BlueSoleil™ only when the user does not want another device to connect to their computer.

**Non-discoverable** Bluetooth devices have three modes: General discoverable, Limited discoverable and Non-discoverable mode. In Non-discoverable mode, a Bluetooth device will not respond to any inquiry, so another Bluetooth device will not be able to find it.

**Non-pairable** A Bluetooth device can be pairable or non-pairable. When it is non-pairable, it will not accept a bonding request from other devices.

**Pairable** A Bluetooth device can be pairable or non-pairable. When it is pairable, it will accept a bonding request from other devices. After the bonding process is finished successfully, two devices are paired. They now form a trusted relationship. There is no need to exchange Bluetooth Passkeys the next time they connect.

**Piconet** A collection of devices connected via Bluetooth wireless technology in an ad hoc fashion. A piconet starts with two connected devices, such as a portable PC and an Access Point, and may expand to eight connected devices. All Bluetooth devices are peer units and have identical implementations. However, when establishing a piconet, one unit will act as a master and the other(s) as slave(s) for the duration of the piconet connection. All devices have the same physical channel utilizing the same Frequency-hopping sequence, defined by the master device clock and the Bluetooth Device Address.

**PIM** Personal Information Management.

**Radio Signal Strength** Bluetooth operates on the 2.4G ISM band. The radio signal is stronger when the remote device is closer or the remote device has a higher radio output. The radio signal is weak when the remote device is distant or the remote device has a weak radio output. The strength of the remote device's radio signal affects the quality of the communication of the two Bluetooth devices. When the radio signal is weak, the Bluetooth data transfer speed is slow. However, if the two devices are too close and the radio signal is too strong, the Bluetooth data transfer speed is also slow because the "sound" is too loud to "hear". The radio signal strength is always referred to as RSSI in Bluetooth.

**Remote Bluetooth Device** My Bluetooth device sees all other Bluetooth enabled devices as remote Bluetooth devices. For example, a Bluetooth modem, Bluetooth mobiles or a Bluetooth PDA .

**Start Bluetooth Service** Start the selected Bluetooth service. Only after the service is started, can other devices browse the service and connect to it.

**Stop Bluetooth Service** Stop the selected Bluetooth service. After the service is stopped, other devices cannot browse the service or connect to it. The existing connection will be disconnected.